Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS.

VOLUME X.] NEW-YORK SEPTEMBER 23, 1854. [NUMBER 2.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At 128 Fulton Street, N. Y. (Sun Buildings,)
BY MUNN & COMPANY.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Agents.

H. Taylor, Baltimore, Md.	Dexter & Bro., New York.
Federhen & Co., Boston.	B. Dawson, Montreal, C. E.
Stokes & Bro., Philadelphia.	M. Boullemet, Mobile, Ala.
Le Count & Strong, San Fran.	E. W. Wiley, New Orleans.
S. G. Courtenay, Charleston.	E. G. Fuller, Halifax, N. S.
Avery Bellford & Co., London.	M. M. Gardissal & Co., Paris.
	S. W. Pease, Cincinnati, O.

Responsible Agents may also be found in all the principal cities and towns in the United States.

TERMS—$2 a-year :—$1 in advance and the remainder in six months.

Devil's Shoe Strings.

A correspondent writing to us from Leavenworth, Indiana, describes a running vine on the Ohio bottom lands which gives the farmers a great deal of trouble, and which he says, "grows twelve feet long in a season, and cannot be killed by grubbing or plowing." It is like a strong grape vine, bearing yellow and red blossoms, as large as a teacup, and in form like those of a lily. They are known by the name of "Indian Creepers," and "Devil's Shoe Strings," and our correspondent would like to know of some successful method of extirpating them. If plowing and grubbing cannot destroy them, we do not know how they can be by any other plans.—We would reasonably suppose that by plowing and grubbing, and never allowing them to blossom, that they would be extirpated. The labor, no doubt, would be great, but continued perseverance would, we think, be crowned with success.

Vermont Gold.

We have received a letter from a correspondent respecting the remarks we made in our last volume relating to the reputed discovery of gold at Bridgewator, Vt. He says that our remarks were just and correct; that he recently visited Bridgewater, and went to the reported gold mines, about five miles N. W. from the village. He there found persons working a vein of quartz, of about ten or twelve inches in width, imbedded in gray slate stone, but he could not see a single particle of gold. He saw some specimens of lead and sulphuret of iron, but that was all. A number of the inhabitants went there and excavated for gold, but all they made was—0.

Sawing Fire Wood.

The accompanying figure is a perspective view of a machine for sawing cord wood, for which a patent was granted to Jean J. Efferem, of Springfield, Illinois, on the 1st of last month.

A is a substantial common saw horse; below the common brace which unites the double cross legs of the horse, there passes a shaft with a crank, B, on it; the shaft is supported in bearings held up by chains between the legs, A. C C are fly wheels on this shaft. D is an arm (there is one on each side) connected to the crank shaft; it is formed of two parts with teeth, so as to shorten and lengthen the same, for the stroke of the saw, as may be required. E E are vertical levers attached to the arms, D, by wrists, F. The saw, G, is attached to the upper parts of levers E E, by a strap. The lower ends of these levers are secured to the saw horse by connections at H. I is a brake or shaft capstan, which is employed to work a chain that supports the bearing boxes of the fly wheels, when the machine is at work sawing, and to lower them to the ground, to use the fly wheels to run the machine from place to place like a cart. K is a slot in one of the legs of the saw-horse, and there is a like slot in the other leg.—These are for the purpose of receiving the ends of handles, like the stilts of a plow, to push the machine forward when removing it from one place to another. L is a lever or dog to confine the billet of wood in the horse, and hold it firm to the action of the saw.

By pulling the saw the fly-wheels are set in motion through the agency of the levers, E, and their arms operate the crank, B, of the fly-wheels shaft. The fly-wheels, it is inferred, accumulate the power, and tend to produce an easy uniform motion for the operator, who must slide down the saw as it cuts downwards through the strap that connects it with the vibrating levers, E E. The claim is for the combination of the saw horse with the fly-wheels, as shown and described.

More information may be obtained by letter addressed to Mr. Efferem.

MACHINE FOR SAWING CORD WOOD.

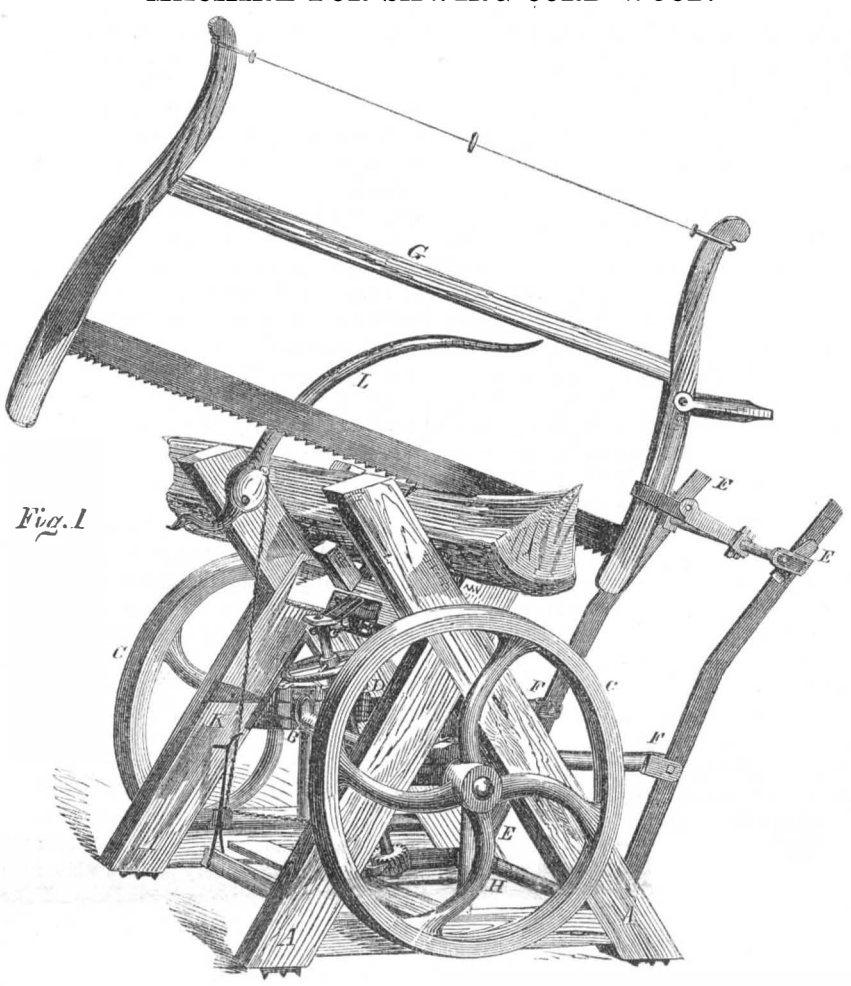
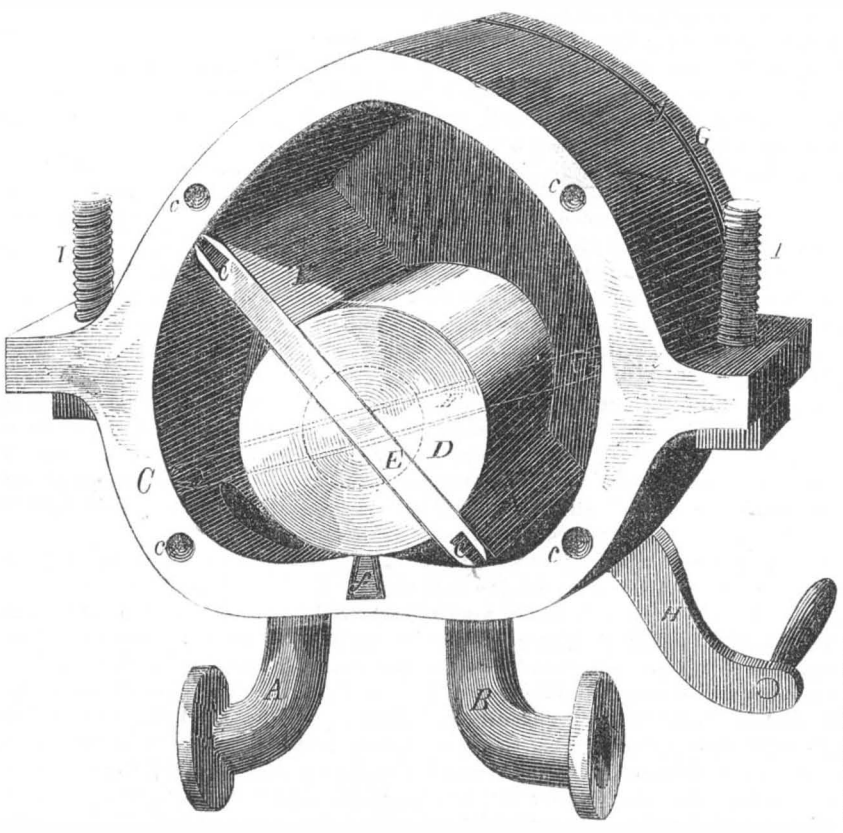


Fig. 1

ROTARY PUMP AND ENGINE.



The accompanying figure is a side view—in perspective, with a plate of the casing removed—of a Rotary Pump and Engine, for which a patent has been applied for by Josephus Chandler, of Attica, Ohio.

A is the inlet, and B the outlet or discharge pipe; the office of these pipes, however, may be reversed, and they may be used either for water or steam. C is the case, within which is a chamber resembling an inverted heart in form. At the point, *f*, of the case suitable packing is inserted, which extends through the whole breadth of the chamber. E is a piston corresponding in width to the chamber; its ends, *e e*, have packing inserted into them, where they bear or rub against the inner face of the case. D is the shaft drum, with an oblong slot through it, in which are friction rollers, and in which the winged piston, E, slides back and forth, as the shaft is revolved. The shaft has its permanent bearings in the end plates, G, of the case, which are secured by screw bolts, *c c*, to side plates which have flanges at *g*, to receive them. The side plates are made in two sections and united by clasp flanges secured together by bolts, I I. All the seams are packed to make the case perfectly steam and water tight. H is a lever handle to rotate the shaft. Some part of the drum, D, of the shaft is in constant contact with the packed point, *f*. As the wings of the piston, E, work air-tight in the chamber, and as the pipe, A, (or vice versa) is connected with a pipe submerged air-tight in the well or cistern, it follows that the water will flow into the chamber through the pipe behind or under one side of the wing of a piston, and be driven out before it on the other side through the pipe, B. Owing to the position of the induction and eduction passages near the inner projecting lower part of the case, a constant stream of water is received and discharged.

More information may be obtained by letters addressed to Mr. Chandler.

Colt's Revolvers in London.

We perceive by a letter in the London *Morning Advertiser*, that in some London paper (the name is not given) a correspondent has been making wrong and unfavorable comparisons between Colt's and some other pistols now being made by some English manufacturer. It seems by the correspondence of the *Advertiser*, that the great advantage claimed for the English over the Colt pistols, is an arrangement of the lock, which had been used but abandoned by Col. Colt as a defect, as it tended to divert the aim of the person using it. It is asserted that Col. Colt has not received fair play in London. We regret this, for he has no doubt conferred a great benefit upon the War Department of England by establishing a manufactory for his revolvers in that country.

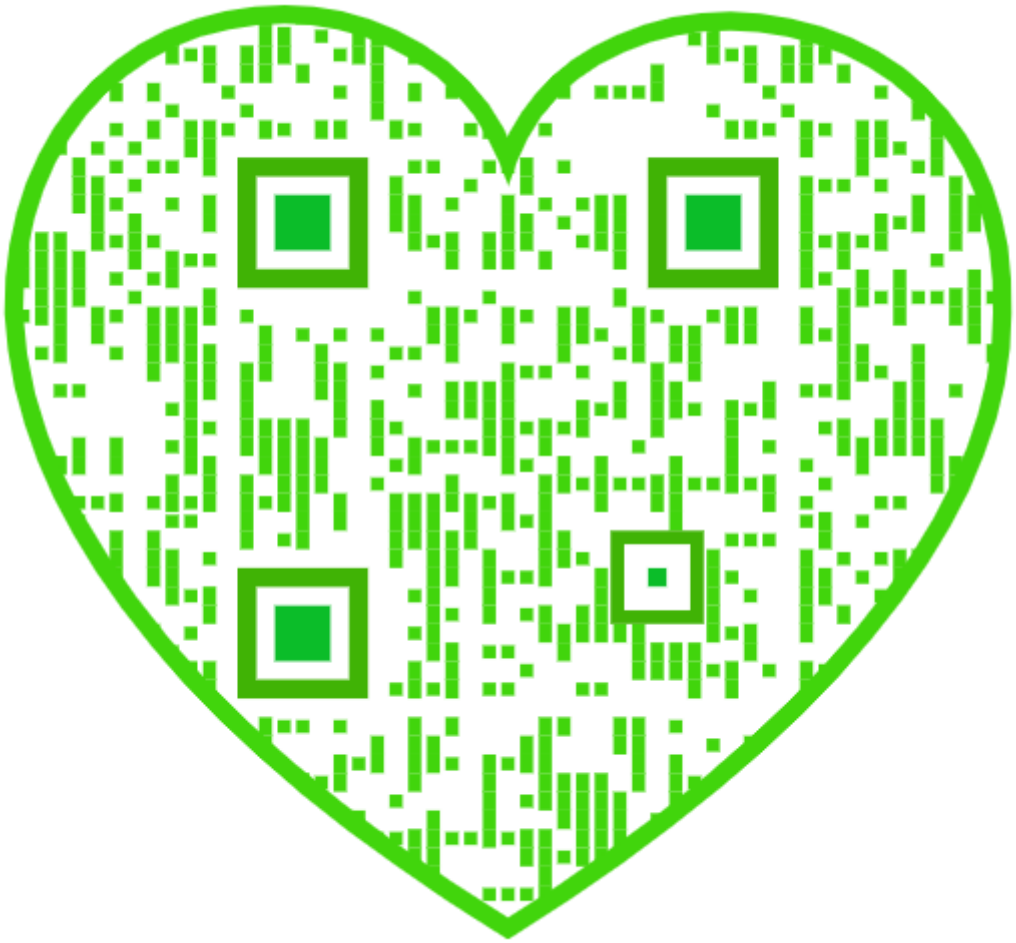
New Material for Paper.

Among the many substances which we have seen recommended to be used for making paper, E. Merriam, of Brooklyn, suggests the wild cucumber plant as one which is eminently suitable for furnishing a substitute for rags. He says that it is of rapid and luxuriant growth, and a single seed will produce more than one thousand feet of vine, which, when properly cured, may be converted into cordage.

To Clean Brass.

If brass is corroded with oxyd—green or black—it can be removed by rubbing it with some diluted acid, such as sulphuric. This is rubbed on the brass with a cloth or sponge, and the brass then washed in hot water. After this the brass must be well rubbed with rotten-stone and sweet oil, and finished with whiting or tripoli. Some persons use oxalic acid dissolved in water, instead of sulphuric acid, for the above-named purpose, and it is indeed more convenient, but it is very poisonous, and is therefore dangerous to keep in houses where there are children.

© 1854 SCIENTIFIC AMERICAN, INC.



King Snakes and Rattle Snakes.

An article was published in the 48th No. Scientific American, last volume, by S. Gillman, L. L. D., "on the venom of serpents."

Dr. Gillman, in that article, in referring to the fact, that after placing two speckled king snakes into a den of rattlesnakes, and the king snakes having destroyed in one night's time nearly all the rattlesnakes—after which he introduced the venom of a rattle snake into one of the king snakes—it having died immediately, comes to the conclusion, and says, "thus evincing that they (the small snakes) must have exercised some power besides physical force to overcome their fellow creatures."

My object in noticing this remark of Dr. Gillman, is to state that I believe the small snakes did not exercise any power besides physical force for the destruction of their fellow creatures, and my reason for thinking so. The principal reason I have for entertaining the opinion I do is this: some years since I witnessed a small speckled king snake overcome a rattlesnake of considerable size. In Tuscaloosa, Ala., I was employed with my father's hands in clearing a piece of new land in the spring, and I happened to pass a brush pile, when my attention was attracted by an uncommon noise and rattling of leaves. My first thought was, that a gray squirrel was in it, and that I would attempt to capture him; but on closer examination I discovered a small speckled king snake coiling himself round a rattlesnake from his neck to the large part of the body. It all seemed to be the work of a second. After seeing the little fellow secure his enemy, I tore away the brush pile, and with a stick took the snakes out. The rattlesnake was apparently dead, while his captor, from time to time, still continued to draw himself tighter around his enemy. After seeing what I have above related, I have no doubt but the Dr.'s king snakes overcome their fellow creatures with physical force. It is well known to us backwoods people that there are other snakes not poisonous that destroy the venomous ones: the small black snake, for instance, will do it. A circumstance of the kind was related to me by an eye-witness. "I observed," said he, "quite a small black snake moving forward apparently with a great deal of caution. He seemed to be smelling on the ground as though he were trying to track something, and thus he would elevate himself 12 or 18 inches, and seemed to be looking for some object. I concluded to remain perfectly still and see if I could find out what the little fellow was up to. I suppose he went on for some twenty yards in this cautious way, when his movements became so peculiar that I supposed he had descried his object, and upon observing closely I saw, about four feet in front of him, a rattlesnake of unusual size. The small snake seemed to select what I suppose seemed to him a favorable opportunity, and leaped upon his enemy, catching him just behind the head, and as quick as thought coiled himself around the larger one, and soon overcame him."

I am somewhat surprised that so close an investigator as Dr. Gillman, after residing, as he tells us, for three months in Arkansas, and having his attention drawn to snakes, should not have ascertained the fact that most of the venomless snakes look on poisonous ones as their enemies, and so destroy them, as related above. We "down South," were we disposed, could no doubt interest you with our snake stories. I once witnessed the catching of a rabbit by a snake about the size of my thumb—saw how the snake killed and swallowed it, and noticed particularly the principle upon which so small a snake was enabled to swallow so large a body. B. C.

Welding Steel on Shears' Blades.

The welding of steel upon iron is a very particular operation, and one which requires great experience and care to perform. An improvement in machinery for welding steel on the blades of shears, and finishing them, has just been made by Robert Dawson, of Huntingdon, Conn., who has taken measures to secure a patent for the same. The principal operating parts are two dies, one being of the form required for the back or outer side of the blade, and the other of the face or inner side of the same when finished. The former die is arranged in a sliding bed, the latter on a roll above it, the former receiving and forming a solid bearing for the whole of the iron part of the blade, and the latter having a flat face to rotate in contact with and press upon the steel, for welding it to the iron properly, both being caused to move together by gearing between the bed of the lower die, and the roll of the upper die.

Condensed Air as a Motive Agent.

B. R. Buckelew, of San Francisco, informs us by letter, that he is about to construct a boat to ply between that city and Marin city—twelve miles distant—which is to be propelled by rotary engines, supplied with condensed air at a high pressure, The condensed air for propulsion he intends to store up in large reservoirs, at each end of the ferry, and to store it up by wind, steam, and gunpowder force. From these reservoirs, the boat is to be supplied at the end of each trip by taking the compressed air into smaller reservoirs in the boat, from which it is supplied to the engines, like steam. He has also invented a regulator, to equalize the pressure of the air.

Compressed air has been employed, and still is, to propel a locomotive up an inclined plane, near Paris, and an engine has been worked for a long time in a coal mine, as described in Vol. 4, Scientific American, near Glasgow, by compressed air. We have also seen accounts of a carriage having been propelled through the streets of Paris by compressed air, contained in a portable strong metal vessel. It is our opinion that condensed air never can be used with economy in the propulsion of engines. First of all, it has to be condensed by an engine, either a water-wheel or a wind-mill, and owing to its great bulk, it would require immense magazines in which to store it up.

The Water Wheel Challenge.

Our readers will remember that we presented on page 402, Vol. 9, Scientific American, a challenge for the manufacturers of water wheels to compete with that of Mr. Vandewater. Since then we have received quite a number of communications on the subject. One correspondent, A. B., of Susquehanna, Pa., says that a good plan for those who wish to try their water wheels, would be to exhibit a working model twelve inches in diameter, under sixteen inches head, driving an archimedean screw, the wheel which drives the whole water up nearest to the horizontal head to receive the prize. He suggests that the trials take place in the Crystal Palace Arcade, and every candidate to pay an entrance fee of $50 to form a prize. He is ready to be put down for that sum.—Another correspondent, J. H., of N. H., makes the same suggestions as the above with regard to the size of the wheels, but with respect to testing their power, he recommends the friction brake.

Water Wheel Challenge.

The "Water Wheel Challenge" on page 402, last volume, Scientific American, may lead to some fine sparring. I have now in my mill a water wheel entirely constructed of wrought iron. The wheel is twenty-three feet two inches in diameter, and three feet ten inches wide. The bottom of the forebay is on a level with the upper edge of the wheel, and the water is let on the wheel with a curved pitch back shute. To grind and dress three bushels of wheat per hour, I draw a gate three feet by three-quarters of an inch, under a six-inch head; which makes, if my calculation is correct, about two and seven-tenths horse power. I see, in a note by the American editor of *Weisbach's Mechanics*, in Vol. 2, page 194, that "three excellent over-shot flouring-mill wheels with all the modern improvements," required one and a-half horse power to grind and dress one bushel of wheat per hour, which would be four and a-half horse power for three bushels. I think Mr. Vandewater had better not be too hasty to bet. It is not patented, and I therefore have no interest in the matter, further than the gratification of having the best wheel, if it should prove so. "Necessity," here again, has been "the mother of invention." The wheel is a curiosity.

A. W.

Middleton, Pa.

Remarkable Spring.

S. N. Caralho, an artist, in a communication to the San Francisco *Herald*, describes a wonderful spring which he discovered on a journey from the great Salt Lake to Los Angelos. He says:—

"We followed up the stream of the cottonwood springs, on the 30th of May last, for about three miles, when the road turned a little to the right: as I was anxious to see the head of the stream, and from the appearance of the surrounding country, I judged it to be very near. Parley Pratt, several other gentlemen, and myself, continued up the stream, and after a ride of half a mile we came to a large spring, 35 feet wide and 40 long, surrounded by acacias in full bloom. We approached through an opening, and found it to contain the clearest and most delicious water I ever tasted; the bottom appeared to be not more than two feet from the surface, and to consist of white sand. Parley Pratt prepared himself for a bathe, and soon his body divided the crystal waters. While I was considering whether I should go in, I heard Mr. Pratt calling to me that it was impossible to sink, the water was so buoyant. I hardly believed it, and to be able to speak certainly, I also undressed and jumped in. What was my delight and astonishment to find that all my efforts to sink were futile. I raised my body out of the water, and suddenly lowered myself, but I bounced upwards as if I had struck a springing board; I walked about the water up to my arm-pits, just the same as if I had been walking on dry land. The water, instead of being about two feet deep, was over fifteen—the length of the longest testpole we had along. It is positively impossible for a man to sink over his head in it; the sand on the banks is very fine and white; the temperature of the water is 58° Fahr. I can form no idea as to the cause of this singular phenomena. Great Salt Lake also possesses this quality, but this water is perfectly sweet. In the absence of any other name, I have called it the *Buoyant Spring*. I have never heard it spoken of as possessing this quality, and should like some of the *savans* to explain the cause of buoyancy."

If the spring discharges a large volume of water, the great pressure from beneath will uphold those who bathe in it and prevent them from sinking.

Great Railroad Bridge—Maine Mechanics Association.

Messrs. Editors.—I noticed in a recent number of the Scientific American an article concerning a "Great Railway Bridge" over the Illinois River, at La Salle. It speaks of it as being fully equal to any structure of the kind in America.

The Grand Trunk Railway Company have commenced a bridge across the St. Lawrence, at Montreal, for the passage of the trains of the Atlantic and St. Lawrence, and the St. Lawrence and Atlantic Railway, which for size and strength will exceed anything of the kind in the world. It is to be nearly three miles in length, crossing the river at an angle.

It is to be constructed of iron materials at an estimated cost of about five millions of dollars. The parts are fitted in England, and a part of them have already arrived at this port, and been transported over the road to Montreal.

This vast structure is under the Superintendence of Robert Stephenson, and it is expected will be finished in about two years. It is to be at an elevation sufficient for the largest ships to pass under at all times.

The Managers of the Maine Charitable Mechanic Association are busily employed in making preparations for the coming Fair. They have erected a new building two stories high, and 120 feet in length, immediately in front of, and connected with the City Hall. This new building is to connect at the other end, by means of a bridge thrown across the street, with another large hall, all three of which they hope to see well filled with contributions from all parts of the country. The managers will spare no pains or expense to make everything convenient for such as shall send the productions of their skill and labor for exhibition. Yours, G. L. Bailey.

Portland Me., Sept. 8th, 1854.

To Mechanics—The Scientific American.

There is much zealous truth in the annexed extract, taken from the Granville (Ohio) *Journal*:

"The question is often propounded—'Why have we so few really scientific artizans and mechanics amongst us compared with the number of those who follow these pursuits?' The answer is at hand: It is the neglect of those who are engaged in mechanical avocations to thoroughly acquaint themselves with the scientific details of their business. They are too apt to be content with following the rules which were taught them during their apprenticeship without investigating the principles upon which they are based, or in working after the models and instructions of others, who being more prudential and wise have made themselves familiar with the scientific principles of their employment.

The mechanic or artizan can with no more propriety expect to excel in his particular sphere without hard study and deep and close reflection, than the physician or lawyer to arrive at eminence in his profession without similar application. If we wish to arrive at distinction in any of the avocations of life, we must avail ourselves of the observation and experience of others as well as that of our own. This is the grand secret of success in arriving at perfection in any thing, and we wish it were more fully appreciated by our fellow mechanics. If apprentices to the mechanic arts would but spend the money they squander for 'yellow covered' romances, song books, and such worthless trash, which but poison their minds, corrupt their morals, and unfit them for the duties of life, for good scientific papers and books, and use the time they idle away evenings on the streets and around places that should never be frequented by them, in the perusal of these periodicals and books, they would find, when out of their apprenticeship, that they would be better workmen, more respected, and much better qualified to fill the various spheres in which they may be called to act; and if our master-mechanics and journeymen would take greater pride in storing their minds with scientific truths, and keeping themselves well posted in all the advances and improvements in the mechanic arts, they would be more capable of imparting instruction to those working under them and rendering greater satisfaction to their employers, as well as elevate their calling.

We have neither time nor space to pursue this subject further at present—but would once more recommend the Scientific American to all those who are anxious to become better acquainted with mechanical science, as one of the best, if not the best medium for that purpose published in our country."

We thank the editor of the *Journal* for his favorable opinion of the Scientific American.

Coal—New Sources—Consumption.

Amongst the items of information contained in the latest arrivals from the United States is one of considerable importance relative to coals to be procured in the Pacific and Eastern Oceans. It is found in Australia, and is soon to be abundant in Calcutta, obtained from the Burdwan mines. The *Alta California* has learned from Captain Adams, the bearer of the despatches from Commodore Perry, concerning the treaty with Japan, that "a coal depot will be established at Simoda, for the convenience of steamers, running from California to China, and the *Japanese agree to supply whatever quantity of coal* may be required." If we are to believe that coal can be obtained abundantly in Japan as it is already said to be obtained in Vancouver's Island, we may anticipate a great diminution of expense in navigating the Eastern Ocean and the Pacific by steam, and some relaxation in the excessive demand which has within a few years arisen for English coal.—[London Economist.

© 1854 SCIENTIFIC AMERICAN, INC.

Locomotive Performances.

MESSRS. EDITORS—Observing in your paper of the 9th, in chronicling a locomotive feat (which was underrated), an expression of doubt as to its correctness, I send you the enclosed, clipped from the Cleveland *Herald*, of August 19th, which, you will perceive, emanates from the office of the Superintendent of the Cleveland and Pittsburgh R. R., being the result of a trial with the locomotive *Rocket* of our manufacture. We believe, from our knowledge of the matter, the statements made to be strictly correct; would say further, that on a subsequent trial with the *Rocket* she ran from Cleveland to Wellsville, 104 miles, with 89 cubic feet of wood. We have the affidavit of the engineer upon the locomotive *Nashville*, as to the correctness of his statement (which you doubt), backed by the certificate of superintendent of machinery on Cleveland and Columbus, and Cleveland and Erie R. R., and could procure affidavits of the other statements made were it necessary. These experiments have been made without our participation, and are the result of tests made to compare the relative merits of locomotives, and must be gratifying to all lovers of progress in manufactures, as they certainly are to us.

W. B. CASTLE,
Secretary of Cuyahoga Steam Furnace Co.

The following is the article in the Cleveland *Herald*, to which our correspondent refers:

It is but three days since we noticed the performanoe of a locomotive built at the Cuyahoga Works, which ran 295 miles, using but one tender of wood.

We have been furnished by Superintendent Durand with the following statement:

SUPERINTENDENT'S OFFICE, C. & P. R. R.,
CLEVELAND, Aug. 17, 1854.

The locometive *Rocket*, built by the Cuyahoga Steam Furnace Company, Cleveland, George Moores, engineer, Edward Reed, fireman, ran three times over the entire length of the Cleveland and Pittsburg railroad, and once from Cleveland to Alliance and back, also four times between the Pier and the machine shop at Cleveland, performing the entire distance of 430 miles with one tender of wood.

DETAILS OF TRIP.—Distance run with three cars, 249 miles; distance run with four cars, 171 miles; distance ran with engine alone, 10 miles; total distance, ascending 40 by 50 feet grade, 102 miles; total ascent of all grades in distance run, 5,439 feet; total number of stops, 71.

Of course it will not be disputed that Engineer Moores and fireman Reed were determined to see what the *Rocket* could do; neither will it be claimed that ordinary engineers and firemen could perform the feat.

But it shows what an engineer of admirable skill, and a fireman of extrordinary judgment, can do with one of the engines made at the Cuyahoga Works. It shows, too, that it is for the interest of the railroad Companies to employ first class men, and to pay such men.

We do not know what the facts may be, but suppose, of course, the tender was packed full of wood. It is a tender of usual size for a first class express engine, and thus packed, can be made to hold say three cords of wood. To run this distance of 430 miles with an ordinary machine, as ordinarily handled, would require about twelve cords of wood. The saving is easily cyphered out."

The article referred to, appeared on page 412 of our last volume. We, indeed, did doubt such performances referred to, and are glad to have that doubt pleasantly dispelled; but we are not the less astonished. We would also state that we received a letter from Joseph E. Holmes, Engineer of the Newark Machine Works, Ohio, who, like us, also doubted the public statements referred to; and he went to the machine shop of the Cleveland and Columbus R. R., in Newark, and was informed by the superintending engineer, J. W. Reynolds, and several other respectable gentlemen, of the correctness of the above statements. It affords us much pleasure to present such facts; "they are truly gratifying to all the lovers of progress" in the mechanic arts.

Engineering Experiments—Testing an Engine.

MESSRS. EDITORS—Thinking it a matter that would necessarily interest you, as *the* mechanical journalists of our country, we beg to submit to your examination a test made, a day or two since, of the capacity of a steam engine employed in this city, by Messrs. Clapp & Henry, of 12 inches diameter of cylinder, and 18 inches stroke, working during the test under a pressure on the safety valve (verified by that on the "pressure gauge" attached also the boiler) of 57 lbs. to the square inch. The engine, during labor, balanced perfectly 320 lbs., suspended on the lever of the dynamometer (a sketch of which we enclose herewith) at a point precisely 5½ feet distant from its center (and of course thus far distant from the center of the engine shaft.) The uniform speed maintained by the engine during the test being 125 to 128 revolutions per minute.

The results (which we regard *extraordinary*) we calculated thus:

The weight sustained being 320 lbs., at 5½ ft. radius, with revolutions, say 125 per minute.

5½×2=11=diameter of circle described.

11×31·416=34·557=circumference of circle in feet.

34·557×125=4319·625=number of feet attained per minute.

4319·625×320=1382280=or effect in pounds raised one foot in a minute.

Which reduced to H. P. by dividing with 33·000 equals 41·80 horse power.

The experiment, being new in our section, elicited, as you may imagine, a good deal of interest, and with it considerable solicitude that the figures attained should be submitted to your inspection. J. S. WINTER,
President of the Montgomery Iron Works.
Ala., Sept. 6th, 1854.

[The result is, indeed, extraordinary.

Mr. Winter has also sent us a drawing of the brake which was applied to test the engine.

The Copper Mines of Lake Superior.

A visitor to the copper mines of Lake Superior contributes to the Detroit *Advertiser* some account of the mining operations in the great copper district of Lake Superior. He says:

"The vein is made of vein-stone and mass copper. The mass copper is entirely pure metallic copper. The vein-stone has fine particles of copper diffused through it. This is called *stamp*-copper, because the stone has to be stamped (crushed) or pulverized, in order, by washing, to separate the copper from the stone.

The underground captain is from Cornwall, and most of the miners are Cornish. I asked the captain how mining here compared with that of Cornwall, to which he replied that it was less irksome and unhealthy. There the miner became dripping wet almost as soon as he had entered the mine, while these miners were almost entirely dry. There, so great was the depth that the heat was almost suffocating, an hour and a half being required to ascend to the surface, the air being so foul as to be often scarcely capable of sustaining life, while here no inconvenience was yet felt from these causes.

A miner in Cornwall, he said, was not expected to live beyond the age of about forty. At thirty-five and forty miners generally were broken down and given over to die.

The vein-stone, as it comes from the mine in chunks, is piled up and burned for twenty-four hours, as lime is buraed, tc prepare it for pulverizing the more readily. At the same time the burning liberates a considerable portion of the mass copper which may be contained in the vein-stone, consisting of bits of from a few ounces to several pounds weight. This is put into casks, and is called barrel copper; the remaining portion of pure mass copper contained in the vein-stone is liberated by the stamping, and is separated for barreling in like manner.

The stamping machinery is very simple, consisting of massive cast-iron weights, which are lifted by the revolving machinery, and left to descend by their own gravity, crushing the vein-stone as it passes beneath them. These crushers are raised by means of projections in a revolving cylinder, one set of which is ready to lift them as soon as another has let them fall.

After passing under the stampers, the resulting mixture of copper and sand is subjected to various washings and rinsings, called *jigging*, *puddling*, &c. Some of it comes out entirely clean, another portion, finer, contains a small percentage of sand, and yet another a still greater proportion of sand, each quality being barreled by itself. This is called *stamp copper*. The percentage of sand left in that of the lowest quality is perhaps 33 per cent., and it is subject to that amount of discount in the market, the price of pure copper being from $500 to $600 per tun, or from 25 to 30 cents per pound."

New Marine Engines.

An iron screw steamship, named the *Brandon*, recently arrived at this port from Havre, and having heard that her engines were of peculiar construction, we took the opportunity, while she was here, of examining them. She has two engines, with two steam cylinders for each—one a small high pressure, and the other double the size, which receives the steam from the first, works it expansively, and is connected with the condenser. This is the Wolfe principle, and its first application to a steamship, we believe. Its economy has been proved by this vessel, inasmuch as she only consumed 13 cwt. of coal an hour on her passage out, frequently running 12 knots an hour, and made the passage in 16 days; an excellent one for a ship of 1,000 tons burden. She has only two tubular boilers, each smaller than those on our river boats; so it is impossible to raise a great deal of steam. The economy of this vessel is obtained from the manner of working the steam, which is somewhat expanded in the small cylinder, and then greatly expanded in the larger one. The crank shaft of each engine has a large toothed wheel gearing into a pinion on the propeller shaft. The two wheels are geared to the one pinion opposite to one another, and run in opposite directions; they exhibit a complete piece of millwrighting. The two engines weigh only 60 tuns—no more than the bed-plates of the *Atlantic*. She consumes only 15½ tuns of fuel per day; and the engines are as easy to handle, the engineer said, "as a child!" This vessel, entire, engines and all, was built on the Clyde, by a new engineering firm—but old Engineers—Randolph and Elder, and is the first they have built. We must say, that the engines, in all their details, are the most compact and complete that we have seen. Our engineers, who have examined them have spoken in unmeasured terms in their praise.

Coal.

We understand that the coal dealers in this city are trembling for their fate, because the people *keep off* and do not buy, and the dealers are in want of money. There was certainly no necessity for the great rise in the price of coal this year, for the crop of fuel at the mines, we presume, was neither affected by the heat nor drouth; nor did the war in Europe make any extra demands upon the Pennsylvania Railroads. It is our opinion that things might be so managed that coal can be sold in this city at fair remunerating prices for five dollars per tun. When coal is cheap the poor rejoice, for in our northern climate there is a great amount of suffering every winter among them on account of the high price of fuel. It is our opinion that the large coal companies have made a great mistake this year in raising the price of fuel so unreasonably high; their conduct has greatly lowered their character in this community.

There is one thing that we cannot understand with respect to the method of doing business by some of the coal dealers in this city; that is, the difference of price at which one sells in comparison with another. Thus we have noticed that one dealer advertises the same coal for $6,50 per tun that all the others (nearly) sell at $7,50. How is this, does he give the same weight as those who sell at a higher price? At the mines a tun weighs 2,470 lbs.; in this city, we are told, it never weighs more than 2,000 lbs., and some say that it weighs in some dealers' carts nearer 1,800 lbs. There ought to be some means adopted by our city authorities for supervising the weight of coal in carts, as sold to customers. When a person goes into a grocery he can see for himself whether he gets full weight or measure, but it is very different with coal in carts. It is our opinion that there is no small amount of deception practiced by many coal dealers; this should be looked to by those who are appointed to look after the interests of the people.

Foreign Crops.

The news from abroad respecting the crops in Europe, inform us that there is more than an average yield of wheat and other grains, and that no flour will be required from America. Indeed at the present moment the flour is much lower in price in Liverpool than in New York. Some of our agricultural cotemporaries inform us that the corn crop, which was supposed to be destroyed by the drouth in many places, is coming in far better than was expected. It is asserted that there was more than one-fifth corn planted this than there was last year, and that, at the most, there will not be a failure of more than one-fourth of the whole crop. Provisions, therefore, in all likelihood, will be lower in the course of a month or so, than they now are, because there are none wanted for the foreign market, and the demand at home must regulate the price.

Explosion of a Boiler.

We have received from J. Todd, of Madison, Ind., a sketch and description of a boiler which recently exploded in that place; it was a vertical one of cylindrical form, with the furnace at the bottom in the center, and the heating surface running up through the interior in a conical form. The boiler was 8 feet long and 3 feet in diameter, with a sheet iron chimney long enough to reach 20 feet above a three story house. The flue was 3 feet at the bottom, and only 12 inches at the top, leaving only about three inches of water space at the bottom of the boiler. The house in which this boiler was placed was blown to atoms—not a brick or stone left unturned. The boiler itself was forced up into the air to such an astonishing hight that it appeared in size like a lard keg to those who witnessedit. It fell three hundred feet from the place where it exploded. No person was hurt, but the engineer made a very narrow escape, and in the shop where the boiler fell a bench was broken, where a man had been working only one second before. It is supposed that the boiler was projected a least 1,000 feet high into the air.

Discoveries in Metals.

M. Deville, of Paris, has, for a long time, been engaged in the preparation of a work upon the pure metals, produced and melted by processes of his own. In the course of his researches he has discovered that the two metals, nickel and cobalt, possess, contrary to the general belief, the useful properties of malleability and ductility in a very remarkable degree, and also an extraordinary tenacity, far superior to that of iron, which has hitherto been supposed to possess this quality more perfectly than any of the metals. From M. Vertheim's experiments on wires of equal diameter, made of iron, nickel and cobalt, it appeared that the weights which determined the rupture of the several wires were respectively as the numbers 60 for iron, 90 for nickel, and 115 for cobalt. This would establish for cobalt a tenacity almost double that of iron. It is asserted that they may be, moreover, worked at the forge with the same facility as iron. They are less subject to oxydation than iron, and may be used for the same purposes.

By the Savannah papers, we are informed of that city being visited with a hurricane, on the same day that Charleston was. It did a great deal of damage.

© 1854 SCIENTIFIC AMERICAN, INC.

New Inventions.

Machine for Cutting Leather.

Jesse W. Hatch and Henry Churchill, of Rochester, N. Y., have taken measures to secure a patent for an improved machine for cutting leather, &c. The pieces of material, in this machine, are cut by means of an endless-edged knife, or punch, of the desired form, attached to a shaft, which receives a reciprocating rectilinear motion. The knife, or punch shaft, is made to receive a half revolution on its axis, so as to change the position of the punch for cutting out articles of different widths at opposite ends, thus to avoid waste of material. The interior of the punch is fitted with a plate, which is connected with the shaft by springs, so that during the cutting operation it will rest upon the material that is being cut, and its springs will yield to the pressure applied to the punch, to allow the latter to continue its motion. When the punch is raised the plate is forced outwards by the springs and made to expel from the punch the piece or pieces which have been cut out.

Sectional Floating Dock.

Morgan Everson and Daniel M. Rickard, of Rondout, N. Y., have taken measures to obtain a patent for an improved sectional dock. Sectional floating docks are made with tight trunks which are partly filled with water to sink the dock to receive a vessel into it, and then these trunks are emptied by pumps, so as to float the dock and raise the vessel above the water. It is very desirable to have the pumps of floating docks so arranged that they will operate rapidly and correctly, We have heard complaints respecting the great length of time required to empty the trunks of such docks, owing to the imperfect working and arrangement of the pumps in the trunks. The above named inventors claim an improved arrangement in connecting the machinery for working the series of pumps in the trunks, and also a peculiar arrangement of the pumps within the water trunks, whereby they (the trunks) are perfectly balanced, and kept in a proper position in the water, however unevenly they may be loaded.

Improved Slate Frame.

Edwin Young, of Philadelphia, has taken measures to secure an improved method of making frames for account slates, whereby, when the slate may be broken a new slate can be easily put into the same frame, thus making one frame serve for a great number hf slates, whereas the common frames are so made as to be comparatively useless when the slate is broken.

Warming Buildings.

John Sawyer, of Fitchburg, Mass., has taken measures to secure a patent for heating apartments more effectually by hot air, from the use of a range or stove in the basement of a dwelling. An interior pipe attached to the range or stove, and forming the smoke flue, passes through the center of the chimney, and heats the air between the two; valves are arranged to admit the hot air into the various rooms, or to shut it off at pleasure.

Corrugated Locomotive Tank.

J. G. Collins, of Lawrence, Mass., has taken measures to secure a patent for making the water tanks of locomotives of corrugated iron plates. He employs a peculiar method of bending or curving the edges of the plates, forming the top and bottom of the tank and uniting them to the body in such a manner as to dispense with the angle irons at the joints.

Slide Valves of Steam Engines.

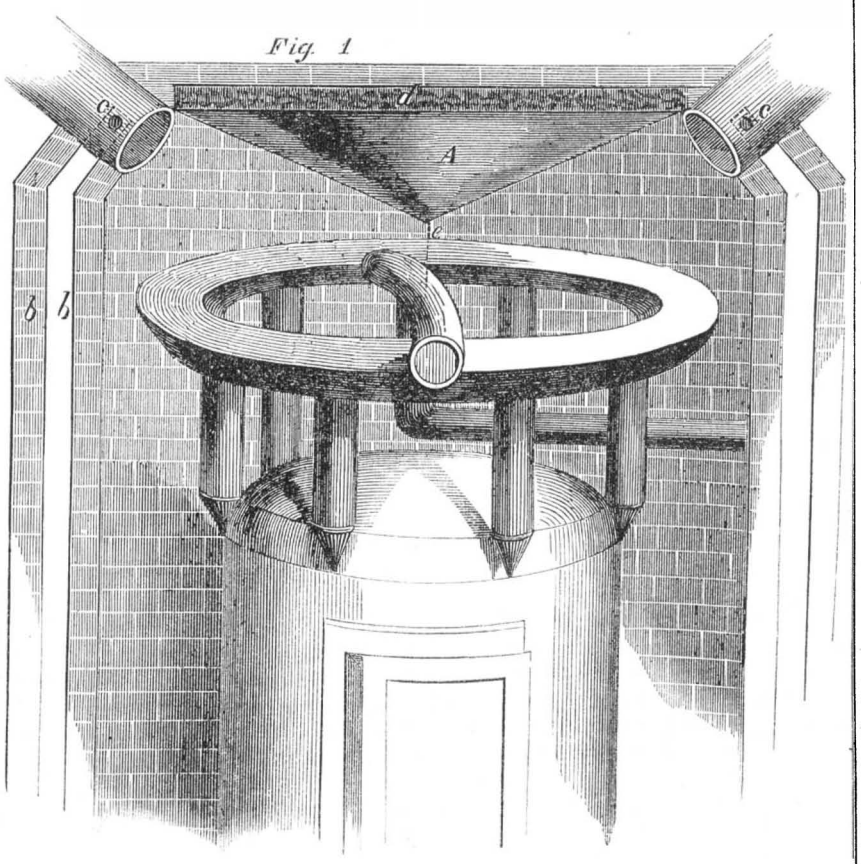
Henry Bates, of New London, Conn., has made an improvement in the combination of slide valves intended to overcome the great difficulty which is encountered in giving the short slide valve any very considerable amount of lap for cutting off the steam early in the stroke, viz.: choking or closing the exhaust port some time before the stroke of the piston terminates. The inventor has taken measures to secure a patent.

HOT AIR FURNACE.

This figure is a perspective view of an improvement in hot air furnaces, for which a patent was granted on the 1st of last month, (August) to John Carton, and Joseph Briggs, of the city of Utica, N. Y.

The nature of the invention consists in providing the upper part of the chamber or enclosure of the furnace with a cover made in the form of an inverted cone, placed directly over the furnace and having its center brought downwards towards the top of the furnace.

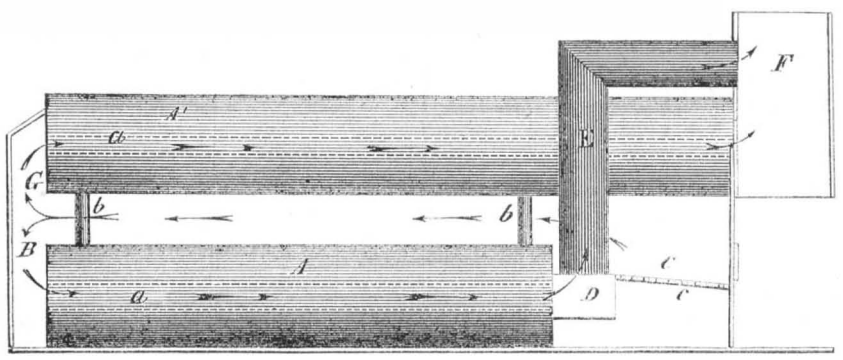
Fig. 1



brick work about two inches. The cover is made to project downwards and comes to a point at *e*, directly over the center of the furnace. The cover thus placed prevents the heat from rising into the top of the chamber and causes it to spread equally from the hottest point towards the several distributing pipes, *c c*, through which it passes, so that no heat is lost or retained, but is more rapidly and equally distributed through the building. The cover may be made of sheet-iron or other metal, or it may be made of some non-conducting durable substance. If the cover be made of metal the space above it under the covering of brick at the top at *d*, should be filled with ashes, plaster, or some non-conducting substance. The claim is for the deflector, A, placed at the top of the chamber of hot air furnaces constructed as described.

More information may be obtained by letter addressed to the patentees at Carton's stove and furnace store, No. 133 Genesee st., Utica, N. Y.

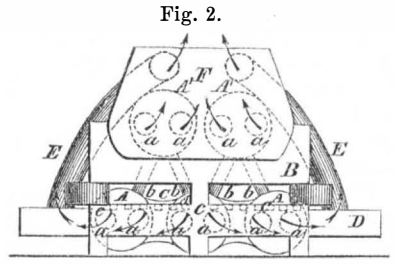
BIRD'S PATENT STEAM BOILER.---Fig. 1.



The annexed engravings represent an improvement in Steam Boilers, for which a patent was granted to Will E. Bird, of Cahawba, Ala., on the 18th of July last.

Figure 1 is a side elevation of the furnace and boilers as arranged and combined, with a portion of the jacket in which the boilers are set, removed, to show the arrangement, and figure 2 is a front elevation thereof.

Fig. 2.



Similar letters indicate corresponding parts.

The nature of the invention consists in arranging a furnace with upper and lower boilers, or series of boilers of different lengths as represented, namely, the lower series of boilers, A, may be placed directly upon the ground or upon the deck of a vessel, and should have one, two, or more flues, *a*, passing through them; the upper series of boilers, A', should be placed a suitable distance above the aforesaid lower boilers, to give between them the requisite amount of flue space for the gaseous products of combustion to pass from the fire chamber, C, located in front of the lower boilers, to the space, G, at the rear ends of both sets of boilers; the front ends of the upper boilers project in front of the lower boilers a little more than the required length of the grate bars, *c*, and form the top of the fire chamber; the rear ends of both sets of boilers should be in line with each other, or nearly so. The upper boilers, A', may be made with or without flues. If they have flues, the flues will discharge themselves directly into the chimney, F, as shown in figure 2. The front ends of the flues in the lower boilers all discharge into a flue box, D, the ends of which extend beyond the sides of the furnace, and are connected by the flue arms, E E, with the chimney, F. Where two or more boilers are used in each set, the spaces between them should be closed in with cement or other suitable substance, in any well known or usual manner. The front of the furnace is formed in any suitable manner. The sides of the furnace, and of the flue space between the two sets of boilers, are closed up by suitable walls. At the rear ends of the boilers a breeching is placed, which incloses the space, G, figure 2, that communicates with the flue space between the two sets of boilers, and with the flue in said boilers. The upper and lower sets of boilers are connected to each other by a series of short tubes, *b b*, which should be of sufficient size and number to conduct the steam formed in the lower boilers, to the upper boilers. The gaseous products of combustion pass in the direction of the arrows. It will be perceived that the intense heat in the furnace will act directly upon the under sides of the front portions of the boilers composing the upper set, and upon a portion of the front ends of each boiler in the lower set, and that the flame and hot gaseous products of combustion will act upon the under portion of each boiler of the upper set, and upon the upper portion of each boiler of the lower set, in passing from the furnace to the space, G, and in passing thence to the chimney, they will act upon the surfaces of the flues in the lower set of boilers, and also upon the surfaces of the flues in the upper set of boilers, in case flues should be placed in them. The advantages of this combination of a furnace with an upper and lower set of boilers are the following, viz.:—First, the center of gravity is considerably nearer the deck, when used in steamboats, than it can be placed in the ordinary arrangement of furnaces and boilers upon the boats navigating the western and southern rivers. Second, the heat generated in said furnace, when combined with the said upper and lower set of boilers, will also act efficiently upon a much larger surface than it can in the present arrangement of furnaces and boilers on the above-mentioned steamboats, and consequently the consumption of a like quantity of fuel will generate a much larger quantity of steam. Third, the bottom of the lower portion of each boiler in the lower set, not being acted upon by heat, the water therein will remain tranquil, which will cause nearly all the mud in both sets of boilers to accumulate there, and thereby prevent the bottoms of the boilers in the upper set from being burned and injured in consequence of an accumulation of mud upon them. Fourth, there is much less danger of collapsing the flues, or explosions, when the boilers are arranged and combined with the furnace in the within-described manner, for the reason that the lower set of boilers must always be full of water, and as it is not an indispensable feature in the said arrangement, that flues should be placed in the upper set of boilers, there need not be any collapsing of flues in said boilers. When flues are placed in the upper set of boilers, they being so few in number—rarely more than two—will be so near the center of the boat's motion that there will be much less danger of their becoming uncovered by the careening of the boat.

The patentee intends to combine, sometimes, one boiler, A, below, and two above, or vice versa, combining them by the tubes, *b b*, and furnace and chimney, as set forth. The claim is for the combination of the lower boiler or boilers, and the upper ones, with each other and the furnace, in such a manner that the top of the furnace will be formed by the upper boilers or boiler, and the rear of the furnace principally formed of the lower boiler or boilers, while the flue space from the furnace passes between the upper and lower boilers, and communicates with the flues, returning through the lower boilers or boiler. Mr. B. has had one of these boilers in operation for seven months, and it has performed according to his expectations, both as it respects safety and economy.

More information may be obtained by letters addressed to the patentee, at his residence named above.

© 1854 SCIENTIFIC AMERICAN, INC.

Scientific American.

NEW YORK, SEPTEMBER 23, 1854.

Delays are Dangerous.

The above proverb, when applied to the performance of any duty, should never be lost sight of by any person for a single moment. That duty which should be performed to-day, should not be left undone till to-morrow, for who can tell what a day may bring forth—to-morrow may be one day too late.—Of the truth of these remarks, all are aware; and yet hundreds upon hundreds have to be continually reminded, that "procrastination is the thief of time." With respect to delays in securing inventions, many inventors know to their cost how much they have lost. By delaying until what they consider would be more favorable opportunities, or from carelessness, they have suffered others to snatch bright prizes from beneath their very pillows. We often receive letters from inventors expressing their deep regret for having delayed to secure inventions for which others had obtained patents. Last week we received a letter from B. R. Buckelew, of San Francisco, in which he states, that several patents had been recently issued to other persons for inventions originated by him, but the benefits of which he was deprived, in default of timely attention on his part. He, indeed, asserts that the delays in his case were caused by circumstances over which he had no control, the principal one being long-continued ill health. We feel deeply for an inventor when placed in such circumstances, and many such cases always will exist. But for one who has lost the benefits of his own invention from delays, on account of sickness, five have lost the benefits of theirs without the shadow of an excuse. One supposed he might not get a patent if he did apply; another who had invented a very intricate improvement, was perfectly confident that no other person had thought of the same thing, and he therefore waited until he was in better circumstances to attend to it. The third thought it best, by the advice of some imprudent friends, to use his invention in secret; the fourth thought his would not pay; and the fifth, that there was not much benefit to be obtained of a patent in any way. No person upon the mere doubt of not getting a patent, should fail to try and get one, if he is confident that his invention is a good one, and that a patent would be of advantage to him. In these days, when mind is so active, and in a country where there are so many ingenious men, no man should consider his invention secure, however intricate, until it is covered with the seal of the Patent Office.—He who thinks he can keep an invention secret, has greater faith in bolts and bars than we have reason to think he should have. No person who makes an improvement, however small, should fail to secure it, for he does not know how much remuneration it may bring him, until he makes reasonable efforts to introduce it. The inventor who believes that a patent for a useful improvement would not be of much advantage to him, may have been dismayed with the legal troubles of some patentees, but if he does not secure his invention for fear of some trouble, he places himself beyond the hope of ever receiving any reward. Many good things have been invented for which their authors never obtained any commensurate remuneration, and it is the fate of some men to toil, study, and produce all their lives, and yet fail to have their merits appreciated until they are moldering with the clods of the valley; in this inconsistent world such things always have been, and still may be expected. But as every inventor deserves to be recompensed for his invention, according to its usefulness and importance, and as the only way whereby he can receive the just reward of his discovery is provided for by law in the securing of a patent, wisdom certainly dictates the proper course he should pursue. As patents are granted only to first inventors, (those who can show priority,) let us say to every inventor who has completed an improvement, "if you ever expect to obtain any remuneration for your toil and trouble, delay not to obtain it, for delays are dangerous."

Theory of Storms—Predictions of the Weather.

Thomas Bassnett, of Ottawa, Illinois, author of a work published by Appleton & Co., in which he presents a new theory of the cause of storms, as was noticed by us in our last volume, has sent us a new pamphlet in which the predictions of the weather are given for this month. By this, we have a criterion to judge of the correctness of his theory. It is well known that a very severe storm swept over a large extent of our country between Thursday evening the 8th and Sunday evening the 11th inst. No such storm appears in Mr. Bassnett's column of predictions. The predictions of the weather are made for the localities of Cambridge, Mass., and Washington, D. C. The kind of weather of the 9th inst. for Cambridge is not given, but for the 8th it says, "rainy evening, squall from North;" and for the 10th, "wind round to North, clearing, fine at night." The predictions, if suitable for Cambridge, were not quite so good for this locality, as Robert Thomas' good old Farmers' Almanac.

For Washington, the prediction for the 10th is left out, but that of the 9th is given. It says, "wind north-west, cloudy from north, (after 3 p. m.)" Not a word is said about a storm. This prediction is very different from the actual weather, reported here by the telegraph. It commenced to rain at 12 P. M., in Washington on the 9th, and poured down in torrents for seven hours. In Philadelphia, Boston and New York, the rain fell in torrents, and the wind blew a hurricane from early on the morning of the 10th to noon. The theory of Mr. Bassnett contends for the existence of a universal imponderable medium, possessing great specific caloric, and inertia, and subject to all the laws of matter and motion, (gravity excepted,) and that there are a series of eddies or vortices in this subtle medium, produced by the center of the earth not being coincident with the axis of the ethereal vortex surrounding it. "The axis of the vortex," he says, "is inclined to the earth's axis, consequently these vortices following the moon in right ascension, are describing orbits, whose apogees are variously situtated, and are caused to circulate over the earth's surface, between the average limits of 10° and 80° in both hemispheres, exempting the poles and the equator from hurricanes." He asserts, that all storms and atmospheric commotions are primarily due to the passages of these vortices.

We can easily conceive that a hurricane may be produced at one place by a vortex in a distant part of the atmosphere, and that storms could be caused by vortices in a medium surrounding our atmosphere, if there were such a medium. We, however, do not, and cannot conceive of any medium possessing inertia and yet devoid of gravity,—if it possesses the one quality, according to our judgment, it must possess the other.

Mr. Bassnett's pamphlet speaks of an expected storm about the 16th inst., but which, so far as we have learned, did not take place anywhere. On the 8th inst. the city of Charleston, S. C., was visited by one of the most terrific storms ever experienced in that place—it was a perfect hurricane, and did great damage; but Mr. Bassnett predicted no such storm. If he understands his own theory, and if it were correct, a fine opportunity was thus offered for gaining a reputation equal to that of the greatest philosophers. We have no doubt however but there is some regularity in storms; they appear to move in grand processions: thus, on the 8th Sept., 1804, Charleston was visited by a tornado equally as destructive as the last, which took place on the same date exactly, but with a distance of half a century intervening.

Gas from Wood.

I wish to inquire if gas cannot be made to advantage for illuminating purposes from wood where wood is cheap, or from the refuse chips and sawdust from the manufacture of lumber. If practicable I wish to make gas to light a small factory and a few dwelling houses near by. The charcoal will be of some value to me, as I shall use a large quantity of that in a year, or if I could make it from the chips and sawdust from the saw mill I should consider the coal from that valuable as a manure. Any and all information respecting the manufacture of gas from wood, whether it can be made to advantage from any and all kinds of wood, whether gas thus obtained would have to be purified, and also a description of the apparatus for making the same. JOSEPH POPE.

Windham, Me., Sept. 9th, 1854.

[We are not positive, but it is our opinion that gas could not be profitably made from wood in any part of our country. Two patents have been obtained within four years in our country, for apparatus to make gas from wood, one in December, 1851, by W. P. McConnell, and the other on the 22nd of last month by Lieut. Porter, U. S. N., and respecting which there has arisen some controversy between these parties.

The apparatus for making wood gas requires to be but little different from that for making coal gas; the gases of both have to be purified by passing them through a purifier containing milk of lime. The city of Heilbrom, in Germany, has been illuminated with gas made from wood since last December, but with what results—respecting economy—we cannot at present tell. We have often made gas from hickory, maple, and pine wood, for amusement and experimental purposes. Gas made from wood is an old affair, and a patent was obtained in France in 1800, by Philip Lebon, an engineer, for employing wood gas for general illumination, but he soon abandoned the enterprise. We believe that no wood but that of pitch pine is suitable for making gas; if made from any other wood it ought to be passed through turpentine, benzole, or naphtha, before it is used, to carbonize it. A cord of pine wood weighs 1,904 lbs., its composition is carbon, 49·95, hydrogen, 6·41, oxygen 43·64. Wood therefore contains far too much oxygen for the production of a good gas, the light carburetted hydrogen, ($C.H.^2$) used in our cities being devoid of it. It has been found that in the destructive distillation of light-making substances, that 12½ parts of hydrogen can combine with as much carbon as 100 parts of oxygen, and as there are 10 parts of oxygen in wood to one of hydrogen, while in coal there is one of hydrogen to only ·80 of oxygen (less oxygen than hydrogen) it follows that as carbon is the principal substance in the production of good white light, that wood is far inferior to coal in its very nature as a gas-making material.

We therefore have not the least idea of ever seeing wood employed for making gas on a large scale in any part of our country, where coal, oil, lard, or resin, can be obtained; we shall, however, present an engraving of Lieut. Porter's apparatus in the SCIENTIFIC AMERICAN in a few weeks.

The Smithsonian Institute Again.

The Albany *Knickerbocker* re-echoes the sentiments of the Hartford *Times*, and abuses the managers of the above-named Institute, because they discountenance a large and extensive library in Washington, they believing that it would be in opposition to the expressed sentiments in the Will of Smithson. It calls them "a lazy set of professors; too deficient in talent and industry to obtain situations in colleges." This is not true; no well-informed American would make such charges against the Secretary, whose discoveries in science have conferred honors on his country, and whose reputation is world-wide, and above reproach. While Professor of Natural Philosophy, &c., in Princeton College, he was solicited to take the Secretaryship of the Smithsonian Institute, and conferred honor upon those who solicited him by accepting their offer, not they upon him. We do not like to hear any of our countrymen slandered, more especially any of those who make our land beloved at home, and respected abroad. Smithson willed his fortune to our Republic to found an Institute "to increase and diffuse knowledge among men." and how in the name of common sense could a large and expensive library in Washington *increase* and diffuse knowledge *among* men? It would be useful only to the locality in which it was placed. We believe this Institution might have been better managed, and we think it will hereafter, if sensible men be allowed to rule.

Clubs and Prizes.

Parcels of the SCIENTIFIC AMERICAN made up to go to places, where there are a number of subscribers, always reach their destination in much better condition than papers in single wrappers. This should be some inducement for single subscribers to try and get up clubs; or in small villages to try and induce one or more neighbors to become subscribing companions.

We are glad to have received evidence of a number of candidates having entered the field of competition for the prizes. The prospects of trade for mechanics are becoming brighter than they were a few weeks ago, and it is now believed that the next winter will not be half as bad for workingmen as many anticipated.

Those who are candidates for the prizes, should not fail to solicit every man they know to subscribe; you ask nothing for favor, and you do not know who may or may not subscribe until you ask. For large clubs the amount to each for a years' subscription is a mere trifle in comparison with the value they receive for their money.

The People's Journal.

With the October number, just out, the distinctive issue of this beautiful work ceases, being henceforth merged into the SCIENTIFIC AMERICAN. All remaining subscribers are to be supplied with the SCIENTIFIC AMERICAN; those who are subscribers to both the People's Journal and our own paper, are requested to inform us of the fact immediately, in order that we may credit their subscription accounts with any amount due them from the People's Journal.

The last year's issues of the People's Journal form, bound, a complete book of near 400 pages, illustrated with no less than 650 elegant engravings. The general contents relate to Science, Mechanics, Agriculture, and all kinds of useful knowledge. The illustrations are profuse and excellent, which, with the interesting nature of the contents, give the work a lasting value. Price of the book, in paper covers, $1,50; cloth covers, gilt, $2. To be had at this office.

Chicago Mechanics' Fair.

The Seventh Annual Fair of the Chicago Mechanics' Institute will be held in that city next month, commencing on the 2nd. Information respecting the Rules, Regulations, &c., can be obtained hy addressing the Cor. Sec'y, Geo. P. Hansen, Chicago. We hope the mechanics of Chicago will have a good Fair.

Beautiful Impressions.

We have received from Joseph Wilcox, of Ivy Mills, Pa., some beautiful specimens of impressions on prepared paper, of butterflies, leaves, grasses, and moss. Every line and every tint of the originals are preserved with such extraordinary fidelity that the microscope cannot detect a defect.

$570 IN PRIZES.

The Publishers of the SCIENTIFIC AMERICAN offer the following Cash Prizes for the fourteen largest lists of subscribers sent in by the 1st of January, 1855.

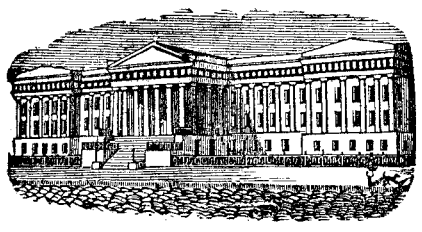
$100 will be given for the largest list,
$75 for the 2nd, $35 for the 8th,
$65 for the 3rd, $30 for the 9th,
$55 for the 4th, $25 for the 10th,
$50 for the 5th, $20 for the 11th,
$45 for the 6th, $15 for the 12th,
$40 for the 7th, $10 for the 13th,
and $5 for the 14th

The cash will be paid to the order of each successful competitor; and the name, residence, and number of subscribers sent by each will be published in the SCIENTIFIC AMERICAN, in the first number that issues after the 1st of January, so as to avoid mistakes.

Subscriptions can be sent at any time and from any post town. A register will be kept of the number as received, duly credited to the person sending them.

☞ See new Prospectus on the last page.

© 1854 SCIENTIFIC AMERICAN, INC.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING SEPTEMBER 12, 1854.

MACHINES FOR CLEANING WOOL—L. W. Boynton, of South Coventry, Conn.: I claim the combination of the cylinder with the hollow or mandril, when these are combined with the horizontal vat, divided into two or more apartments, and the whole is constructed, arranged, combined, and made to operate as described.

APPARATUS FOR TURNING THE LEAVES OF BOOKS—H. C. Bridgham, of New London, Conn., and J. M. Stewart, of Norwich, Conn.: We claim, first, the combination and arrangement of the lever, pawl, ratchet wheel, and pin roller, or their equivalents, so constructed and operated as to raise the pawls in succession, and allow the fingers to turn the leaves of a book as required.

Second, the combination and arrangement which operate the fingers separately when the leaves of a book are turned back to repeat a portion of the tune, in combination with the apparatus which operates the fingers successively, as described, the apparatus which operates the fingers separately when used in repeating, being so constructed and arranged as not to derange the apparatus which operates the fingers successively.

Third, Making one fork of the fingers elastic, or operating it with a spring so as to gripe the leaf of a book when placed between said forks, as described.

SURFACE CONDESERS FOR MARINE ENGINES—Danl. Carpenter, of Brooklyn, N. Y.: I am aware that a perforated guard plate has been used in combination with the ends of the tubes of a surface condenser to distribute the steam entering the tubes; and that a perforated plate has also been placed at the side of a congeries of tubes, to distribute and subdivide the water passing to the outside of the tubes to effect the condensation of the steam inside of them; but in neither case was the plate used for the purpose, and under a combination and arrangement like that which I claim to have invented; and therefore I do not wish to be understood as making claim broadly to the use of a perforated plate in combination with the tubes of a surface condenser.

I am also aware that one series of tubes bent in the form of the letter U have been clamped together by two clamp bars, for heaters or evaporators of liquids, and therefore I do not wish to be understood as making claim broadly to the use of clamp plates for clamping tubes; but I am not aware that several series of tubes have been bound together by outside clamps, and interposed grooved bars to bind all the tubes together in all directions, under an arrangement and combination such as specified.

I claim, in a surface condenser, in which the steam to be condensed is made to pass outside of the tubes, putting the tubes close together by making the two ends of the tubes which pass through holes in the tubesheet of a smaller diameter than the body of the tubes and securing them in place by means of nuts tapped on to the ends thus reduced, as specified.

I also claim, in combination with a congeries, or set of tubes, arranged as described, to constitute a surface condenser, which effects the condensation of the steam outside of the said tubes, a guard plate or plates, with apertures as described, and between the exhaust port or inlet for the steam, and the side or sides of the set of tubes, as described, and for the purpose of protecting the tubes from the violent concussions of the steam when entering, as set forth.

And I also claim as a means of resisting shocks and preventing the vibration of the tubes of a condenser constructed and operating as described, the employment, in combination, of the outside clamp bars and interposed bars grooved to embrace the tubes, so that when bound together they shall be firmly held to resist all lateral motion or vibration, whilst at the same time the clamps and interposed bars will further act as diaphragms to direct the steam across the set of tubes, as described.

BOOTS AND SHOES—Nathl. Colver, of Detroit, Mich.: I do not claim the use of wood as soles, or bottoms of boots or shoes, as used by the peasantry of France or Germany, when worn as sandals or shoes made entirely of wood, and I hereby disclaim any such pretension.

I claim the construction of boots and shoes (with uppers as now constructed in the United States) with a wooden instead of a leather sole, or bottom, attached to the leather uppers, as described, or in any equivalent manner, for the purpose set forth.

[What is the difference between these boots and shoes and common English clogs, with uppers of leather and soles of willow wood? Such clogs have been in general use among the Lancashire peasantry for centuries; every person who has traveled in England has noticed them.]

METALLIC SLAT SHUTTERS—John B. Cornell, of New York City: I claim the improved manner of uniting the sheet metal slats of the shutter, viz., by swaging the edges of the slats into frames of corresponding segments of circles and connecting them by means of hinged bars combined with said slats, and arranged in such a manner that the pivots of said hinges will be concentric with the segmental curves of the edges of the slats, and also cause the flat portions of said slats, when the shutters is open, to be directly in line with each other, in the manner and for the purposes set forth.

OSCILLATING ENGINES—William Craig, of New York City. I claim the steam pipe or valve operated by means of the eccentric rod for obtaining a double action in combination with the follower and trunnion of an oscillating steam engine for the purpose of admitting steam into the face of the trunnion, without regard to the size of parts, substantially in mode of construction of the said parts and application thereof, as described.

I also claim the mode of arranging the eduction and induction ports without regard to size, as set forth.

MILL STONE DRESS—Perry Dickson, of Woodcock Township, Pa.: I claim the dividing the face of the runner and bed stone into three circular courses of furrows, A B, B C, and C D; all the furrows in A B having the same draught, and having twice the number of furrows in B C that there are in A B, and giving these furrows the same draught in respect to themselves, but a different draught from the furrows in A B, in combination with the furrows in the third course, C D, to operate as conveyors in the manner described, or any other construction substantially the same.

PISTON OR VALVE FOR ROTARY PUMPS, &c.—Joseph Gatley, of Rome, N. Y.: I claim the use of a frame fitted with friction rollers to move with the sliding piston, embracing also the method of interlocking, as described.

Also, the modification described, to adapt my arrangement, meanwhile maintaining the requisite efficiency to any purpose where motion is to be communicated through the revolution of the arms, wings, or vanes, the two opposite extremities varied in their relative length by means of an eccentric cylinder or ring.

STRAW CUTTERS—Warren Gale, of Troy, N. Y.: I am aware that throats to straw cutters have been made adjustable so as to approach the knife or recede from it, and also so as to contract or expand in order to compress the straw more or less; therefore I do not claim these features, as heretofore used: but I claim the arranging the flange or flanges on one cylinder, so that they will meet the knife or knives on the other cylinder, as the two cylinders rotate, substantially in the manner described.

I also claim in combination with the flanged cylinders, the throat placed in such relative position to said flanged cylinders as to nearly meet the latter at a desired point in their revolution, thus assisting to give a long cut if said throat be expanded, and a short cut when the throat is contracted, as described.

COUPLING FOR CARRIAGES—Abram J. Gibson, of Clinton, Mass.: I claim as new, the employment of a cylindrical bar of iron having a threaded bolt projecting downwards, and working in a threaded cylinder on the forward axle, for the purpose and in the manner and form, as set forth.

I also claim, in combination with the cylindrical bar of iron, the manner of connecting the rear with the forward axle by means of a threaded bolt formed at the connection of the rods or perches, and working in a threaded chamber, cut in the cylindrical bar, as set forth.

VENTILATING SHIP TIMBERS—Joseph L. Harley and Samuel Maxwell, of Baltimore, Md.: We claim constructing a ventilator for ships' frames, consisting of the tube and cap fitting thereon, sustained by means of the double acting spring on the stem, by which the cap is kept open or securely closed when down, as set forth.

TRUSSES—Seymour N. Marsh, of New York, N. Y.: I claim, first, the ring pad constructed as described, to close the external and internal abdominal rings, by making pressure specially upon those parts, as herein above set torth, and not over the entire external surface of the canal.

Second, The interior ball pad combined with the ring pad, as described, for the purpose of producing upon the enguinal canal a pressure for the purpose of creating an adhesive inflammation, which pressure is entirely independent of the pressure upon the ring pad, and the consequent resistance of the abdomen of the patient, and which is capable of being regulated by a screw or other equivalent means provided for the purpose.

[This is the best improvement in trusses that we know of.]

APPLYING HEAT TO DILATE GASES FOR THE PURPOSE OF ELEVATING WATER—John W. Middleton, of Philadelphia, Pa.: I make no claim to elevating fluids by the dilation or contraction of gaseous media, whether by natural or artificial heat: but I claim the method described and represented of applying heat to elevate water.

CORN SHELLERS—Gilbert Maynard, of Greenfield, Mass.: I am aware that a roughened and beveled wheel with an adjustable guide, has been previously used in corn shellers. I am also aware that the two wheels have been employed in one machine, one wheel presenting its side, and the other its roughened beveled periphery to the ear of corn. These devices therefore I do not claim.

I claim the arrangement herein described, whereby two shelling wheels with their axles parallel, turning in opposite directions, are made to operate simultaneously upon one ear of corn, the ears being fed in between the said wheels, as set forth.

COOKING STOVES AND RANGES—James MacGreggor, Jr., of New York, N. Y.: I claim having a flue or flues surrounding the oven or ovens for the purpose and in the manner as set forth.

REGULATOR FOR GAS BURNERS—Andrew Mayer, of Philadelphia, Pa.: I do not claim the employment of a conical valve to regulate the flow of gas, irrespective of the peculiar construction of the said valve.

But I claim the employment, as described, of a hollow conical valve, perforated at its apex, and having openings around its base, and being arranged with a box which receives the gas through an opening under the valve, as set forth.

DISTRIBUTING FLUIDS—John W. Middleton, of Philadelphia. Pa.: I claim the arrangement of a water reservoir and air vessel between the service pipe and the distributing cocks or near the latter, as set forth.

I also claim the vertical pipe, water, and pressure gauge, substantially, as set sorth, to regulate the flow of fluid through pipes.

APPARATUS FOR DETERMINING THE WEIGHT OF CARGOES IN VESSELS—Ephraim Morris, of South Bergen, N. J.: first, I claim determining the level of the water and the consequent weight of the cargo, by means of a plunger, hollow rod, glass tube, and bulb, applied to the tube containing the water, as specified.

Second, I claim the adjustable socket, with an index marked thereon, in combination with the hollow rod and plunger, whereby the apparatus is adapted to different boats of the same size or to the same boat under various circumstances, as specified.

SPOKE MACHINE—Newell North, of Stow Township, Ohio: I claim, first, the index and cam crank in combination with the forked center or holder and the carriage or their equivalents, for the purpose set forth.

Secondly, I claim the combination of the handles, rod, lever, and poppet center, adjustable cross bars, and screws, the same being combined with the carriage frame and guides, as described for the purpose set forth.

Thirdly, I claim the arrangement or relative position of the cutters, I, with respect to the set of cutters, J, for the purpose set forth.

Fourthly. I claim the support or standard and springs, or their equivalents, combined as described and specified, for the purpose set forth.

Fifthly, I claim the combination of the set of cutters, or any equivalent combination, for the purpose of planing two sides and one edge of the spoke, with the one and the same set of cutters, as described.

BREECH-LOADING CANNON—Wm. E. Osborn, of Milton, N. Y.: First, I claim the eccentric or cam shaped piece set on trunnions, so that the operation of rotating said breech piece on its trunnions by a lever or any suitable means, compresses the curved surface of said breech piece against the rear of the bore or caliber of the gun, as specified.

Second, I claim removing said breech piece from the line of the bore or caliber of said gun by rotating said breech in the reverse direction, causing the cam or projection, or its equivalent to act as a fulcrum, on which said breech is lifted by the one operation of rotating the breech, the trunnions, sliding up in the grooves, as specified.

Third, I claim the construction and arrangement of the hammer and nipple, whereby the hammer is cocked by its own weight, for the purpose and as specified.

TAILORS' SHEARS—Joseph Phares, of Cincinnati, Ohio I claim, first, the placing of the rivet of tailors' shears, outside of the angle formed by prolonging the directions of the cutting edges for the purpose of giviug to the cutting point of the edge an oblique backward motion, thereby increasing the ease of cutting, diminishing the resistance to working the shears and bringing the cutting points nearer the hand.

Second, combining with this the guide, a stud set in one blade working in a curved slot in the other, having a screw thread cut on it, on which is placed a rivet head nut, or other equivalent device, for the purpose of steadying the motion of the edges and more effectual securing them from spreading in the working.

SEWING MACHINES—Philander Shaw, of Abington, Mass.: I am aware that a cam or wiper operating against a friction roller in one arm of a bent lever, made to work or depress a pawl to a ratchet, is an old invention, also that the length of longitudinal movement of such pawl has been regulated by setting its joint pin nearer or further from the fulcrum of the lever, I therefore do not claim any such contrivance.

But I claim the described combination applied to the shaft for imparting to it an intermittent rotary motion so as to obtain the length of stitch as specified, such combination consisting of the cam, the wheel, the movable or sliding box (or its mechanical equivalent) and the spring applied together and to the shafts and made to operate as explained.

PORTABLE GRIST MILL—Samuel Sheldon, of Cincinnati, Ohio: I do not claim the securing of the stones in flanged heads or cups, as such has been done before.

But I claim securing the stationary stone to an upright flanged plate, and the adjustment of said plate by means of slotted flanges and bolts, for insuring in a simple and effectual manner the parallelism of the faces of the stones as herein before set forth, when the same is applied to a mill in which the axis of revolution of the running stone is horizontal.

PALATE FOR ARTIFICIAL TEETH—Lorenzo Simonds, of Boston, Mass.: I claim attaching to an artificial palate, or to any plate to be secured in the mouth, an air chamber constructed with a flexible elastic diaphragm, for more effectually exhausting the air between the artificial palate and the roof of the mouth, as set forth.

CURTAIN FIXTURES—Don Carlos Smart, of Cambridgeport, Mass.: I am aware that a center pin inserted in a socket made in the end of a roller, and resting against a coiled spring placed in said socket, has been employed in curtain fixtures, I therefore do not claim such, nor is it to be considered in any respect as a contrivance equivalent or analogous to my invention either in construction or operation: for with my improvement applied to a curtain roller I am enabled to dispense with a balancing weight to the curtain, and to obtain any amount of friction on the centers or bearings that may be necessary to overcome the weight of the curtain, and sustain it at any desirable hight or position between the limits of its movements.

I am also enabled, by means of my improvement, to dispense with the usual soeket piece or bearings for the journals, that become necessary in other fixtures for curtain rollers and particularly where one of the journals is made movable against a spring, as set forth.

I therefore claim the combining the center pin of the curtain roller with the roller, by means of a screw and making the pin with a head by which it may be revolved, the same enabling me not only to dispense with the usual counterbalancing weight necessary for the window-shade or curtain, but to form in the window frame the female centers or bearing holes by the pressure of the screw, and thereby I dispense with the usual socket pieces generally applied to the window frame for supporting the roller, the whole being essentially as specified.

OPERATING FIRE ENGINES—F. G. Smith, of Columbia, Tenn.: I claim constructing fire engines with springs, in any manner substantially the same as set forth, and for the purposes specified.

RE-ISSUE.

PUMPS FOR ELEVATING WATER MIXED WITH MINERAL SUBSTANCES—Wm. Ball, of Chicopee, Mass. Original patent dated Dec. 23, 1851: I claim the improvement by which the waste auriferous or earthy water that leaks out of the shaft hole of the case is saved and returned into the body of the case, and the wear of the shaft hole of the chamber prevented, the said improvement consisting in the chamber, the collar, and the passage, as combined together, connected with the case, and the shaft of the fan wheel, and made to operate, as specified.

Second, I claim the rings, as constructed and applied to the interior of the pump, for the purpose set forth.

DESIGN.

MOLE TRAP—Henry Fry, of Cincinnati, Ohio, assignor to Saml. Maxwell.

Foreign Items of Science and Art.

PURIFICATION OF FIXED OILS, ESPECIALLY OLIVE OIL FOR WATCHMAKERS.—The colorless olive oil which is used by watchmakers is exceedingly dear, and yet the process of its purification appears to be so simple that any watchmaker may prepare it himself. If common olive oil be mixed with an equal quantity of very strong spirits of wine (sp. gr. 0·853) and allowed to stand for about fourteen or fifteen days, during which time it must be repeatedly shaken; already, in the course of a few days, the yellow color of the oil begins to disappear, and then gradually fades, until, at the end of the period mentioned, the oil becomes colorless. If the mixture be exposed to the direct action of the sun, this change takes place much more rapidly. The under layer of oil is separated from the spirit, which floats upon it, and is preserved in well-closed bottles (stoppered, or with plugs of wood or gutta-percha); the spirit may also be preserved for another operation—or if large quantities be employed, it may be distilled after each operation. The removal of color is not the only advantage which is gained by treating olive oil with alcohol, for a considerable quantity of the margarine which it contains is also dissolved out, and hence oil so treated will not solidify so readily as the raw oil. The process just described, and which is undoubtedly better than treatment, first with sugar of lead, then with sulphuric acid, washing with boiling water, and drying with chloride of calcium, or any other of the processes in common use, is applicable, more or less, to all other oils, even to coarse fish oils. It may be of importance to painters in oil, who are anxious not to injure the delicate tints of ultramarine, rose, scarlet, and other delicate shades of red, and in fact of all pure tones, that linseed oil, even the darkest and muddiest, may be so far bleached as to become bright and clear, and have only a slight yellow tinge; a good deal of oil is now purified in this manner in Great Britain.—[Polytechnisches Journal.

PROCESS OF WHITENING PINS AND NEEDLES MADE OF IRON AND STEEL. BY MM. VANTILLARD AND LEBLOND.—It is well known that pins made of brass wire are deficient of strength and elasticity, and accordingly they have been replaced by pins made of iron or steel; but it is necessary to tin them over.—This operation, however, cannot be performed equally well with iron as with brass; the pins have a rough, uneven surface, which renders them inconvenient to use, as they are liable to tear the cloth.

Messrs. Vantillard and Leblond, wishing to avoid this defect, formed the idea of first covering the iron with a thin coating of copper or other metal having a greater affinity for tin than iron has; but in order that this result should be satisfactorily attained, it is necessary to polish and pickle the pins before coppering them. The above-named manufacturers have most ingeniously effected the polishing, the pickling, and the coppering, by one single operation. To treat, for example, 2 kilogrammes (a little more than 4 lbs. 6½ oz.), 4 litres (about 7 pints) of water, 300 grammes (10 ounces 9 drachms, avoirdupois, by weight) of oil of vitriol, 30 grammes (15 ounces, 13 grains, avoirdupois) of salt of tin, 40 grammes (1 ounce 4 drachms 17 grains) of crystallized sulphate of zinc (white copperas) and seven grammes (about 108 grains' avoirdupois) of sulphate of copper, are mixed together; this mixture is allowed to dissolve during twenty-four hours. The bath being thus prepared, it is to be introduced into a barrel of wood, made pitcher-like, and mounted upon an axis. Into this barrel, which has a capacity of about thirty-five pints, the pins are now to be put; it is then turned rapidly during half an hour, when the pins will be found to have received a pickling, a polishing, and a slight coppering. After the lapse of this time, 20 grammes (about 10 drachms 8 grains, avoirdupois,) of sulphate of copper, in crystals (blue stone), are to be added, and the barrel again turned during 1 minutes, when a solid coppering will be effected, with a finely-polished surface. This done, the liquid in the barrel is to be decanted off, and may be used repeatedly for the same purpose; the pins are washed in cold water, then put in a tray containing a hot solution of soap, and agitated for about two minutes. The soap lye is decanted off, and the pins put into a bag with some fine sawdust and shaken, by which means the coppered surface assumes a brilliant appearance. The pins thus prepared may be tinned in the ordinary way. The articles made in this way are far more beautiful and useful than those made in the ordinary way. This process is the more deserving of attention at present, quite independent of the superior quality of the pins, in consequence of the exceedingly high price of brass wire.—[Bulletin de la Societie d'Encouragement.

Remedy for Yellow Fever.

We have felt deeply for those Southern cities which have been—and still are—so greatly afflicted with yellow fever. Savannah, Ga., has suffered severely, so has Charleston, S. C., and New Orleans. But from the reports of the deaths, as published, it appears that the mortality is chiefly confined to the foreign population, and strangers. In the Savannah *Republican* of the 5th inst., of ten deaths from yellow fever, only one was a native of Savannah, the others were four Germans, four Irish, one New Yorker, and one North Carolinian. In the same paper there is a letter from Dr. S. H. Harris, in which he agrees with Dr. Wildman in reference to the efficacy of the muriated tincture of iron as the best remedy ever applied for this terrible disease.

Camphor Insanity.

We have noticed in a number of our cotemporaries, accounts of various persons who had been deprived of their reason by swallowing large doses of camphor, for pain in the bowels, during the recent cholera excitement. We do not know personally of a single case of insanity caused by camphor, but from the great quantities of this drug so imprudently used by many persons, we have no doubt but the statements are true. A very few drops of the spirits of camphor, in water, is a sufficient dose for a grown up person.

Great Subterranean Road.

The Mariposa, Cal., *Chronicle* gives an account of a wonderful cave which has been discovered by some person whose name is not given, by which a person can pass from the one side to the other through the Siera Nevada Mountain. The entrance was discovered behind a waterfall, and had been long known to the Indians. We are inclined to doubt the truth of the alleged discovery; it has too much the air of a romance about it.

Roofs of Houses.

MESSRS. EDITORS—Can you advise me of the best composition to cover the roofs of houses and other buildings, that will be cheaper and as good as shingles to turn water, and fireproof? You, or some of your correspondents may know of something, and may make it known through your valuable paper.

C. C. P. OLNEY.

Providence, Sept. 8, 1854.

[We have had more than one inquiry of the same nature as the above. We do not know of any material possessing the qualities desired, that is as cheap as shingles.

Gore's Patent Butter Worker.

We noticed this improvement on page 410 of our last volume, and stated that steps had been taken to secure a patent. We should have stated that a patent was granted for it July 25, 1854.

The Patentee resides in Bennington,

© 1854 SCIENTIFIC AMERICAN, INC.

TO CORRESPONDENTS.

O. B., of Me.—It is still admitted that some explosions of steam boilers are caused by the explosion of gases. The present state of science is not opposed to such an opinion.

A. McM., of Ohio—There is an English tinsmith named Jones, in Albany, N.Y., a first-rate mathematician, who may be able to give you a rule for cutting out elbows of stove pipe by rule and compass.

J. M., of R. I.—Can it be possible that you believe sulphuric acid can be obtained from plaster of Paris, by using hydrochloric acid, at less cost than by the common process of manufacture? You do not seem to be aware of the fact that the tall chimneys in English chemical works are now of no use; even Charles Tennant's oven, four hundred feet high, is not required. The hydrochloric acid that formerly escaped, is now all saved. You are certainly mistaken about the cost of this acid.

W. H. S., of Ky.—You will find what you want respecting the cleaning of brass and silver plate on another column.

I. J., of Conn.—We cannot refer you to any work containing an account of the manufacture you speak of.

R. J. J., of Ind.—You cannot obtain a patent for the clockwork to operate a fan, &c., it is not patentable, Com. Barron obtained a patent for the same thing in 1830. A patent may be obtained for the other arrangement.

S. F. M., of S. C.—There will be no danger in drinking the rain water from a roof painted red if it is properly filtered through fine charcoal; perhaps you do this.

T. S., of Pa.—A warranted receipt can be furnished to you for two dollars.

J. J. D., of Ct.—Your plan of covering locomotives is a good one, although we think it will be difficult to get railroads to adopt it; we also believe it is entitled to a patent.

G. K. S., of Pa.—We can tell what substances or paints are employed for graining, but this will not enable you to execute the oak imitation,—that requires practice.

A. E. C., of Me.—By reference to the advertising columns of this paper you will notice lathes advertised. We do not know of better makers than those who advertise in our columns. Subscribers very often write us for information about machinery—where it can be procured, etc., and we invariably refer them to the paper.

R. M., of N. Y.—We are now securing foreign patents for Noyes' Hammering Machine, and shall soon publish an engraving of it; it is a good invention—of this we have no doubt.

E. A., of Va.—There is no patentable novelty in combining a spring and catch for sash fasteners; the idea is old and well known.

A. A., of N. J.—If you will refer to volume 7 Sci. Am., you will find a full description of the Municipal Fire Telegraph now in use in Boston. You can procure this volume at $2,75, bound.

B. R. E., of N. H.—Forming a pocket of wire to guard against the operations of a pickpocket is an old idea, and has often been suggested to us.

R. L. D'A., of Cal.—John Wise, of Lancaster, Pa., is the most competent person we know of, who makes balloons.

I. B., of Del.—We do not think there is novelty sufficient in your method of inserting the heads of casks, to warrant an application for a patent. It may be superior to the old system but the novelty is very slight.

H. G., of Pa.—The size of the still for making absolute alcohol depends entirely on the quantity you wish to operate on. A small still will perhaps answer your purpose.—you can get a common one made by a good coppersmith.

C. G. C., of Ky.—A sidereal year contains three hundred and sixty-five days, six hours, and nine minutes. For a more full explanation you should peruse some good work on astronomy.

J. E. M., of ——.—We do not remember any thing of the recipe for preparing fish, to which you have allude d.

A. J., of Mich.—Your recipe for making ink is a very good one. If the sample you made was too thick, the remedy is to use more water in making it.

J. W., of Pa.—Hemp bagging is manufactured at St. Louis, Mo., Louisville and Marysville, Ky., at least, such manufactures were conducted in these places two years ago, but we were given to understand that they could not compete with the foreign, owing to some way of entering the bagging at a lower rate than the raw material, according to its weight.

I. W., of N. C.—We cannot answer you in regard to Moffit's Thrasher. You had better write to him direct upon the subject, Hydraulic cement becomes quite hard underground, even in water. Common mortar is not adapted for underdrains; use only the cement. We do not know its price.

Money received on account of Patent Office business for the week ending Saturday, Sept. 16:—

J. N. G., of S. C., $925; E. Y., of Pa., $20; G. W. B., of Mich., $50; J. S., of Mass., $25; B. & C., of N. Y., $100; W. D. T., of L. I., $25; B. & C., of Tex., $30; S. & B., of Mich., $30; Y. & S., of Wis., $10; L. B., of N. Y., $30; B. P. H., of Ind., $55; W. H. M., of Ky., $50; G. W. S., of N. J., $10; V. W., of N. H., $55; J. T., of ——, $25; W. H. B., of N. Y., $40; H. D., of L. I., $10; S. W. P., of N. Y., $150; J. M., of N. Y., $45; B., D., of N. Y., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Sept. 16:—

P. T., of Pa.; E. T. L., of Va.; E. Y., of Pa.; J. S., of Mass.; W. D. T., of N. Y.; J., M., of N. Y.; S. & B., of Mich.; V. W., of N. H.; G. W. S., of N. J.; J. S. G., of Mich.; G. W. B., of Mich.; J. N. G., of S. C.; C., W., of N. Y.; W. J. S., of N. Y.; R. W., of O.

Important Items.

Patent Laws, and Guide to Inventors—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office. Price 12½ cents per copy.

Binding—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office, and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

Foreign Subscribers—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the present volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

Receipts—When money is paid at the office for subscriptions a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arriva of the first paper a bona fide acknowledgement of the receipt of their funds.

Back Numbers and Volumes—We have the following numbers and volumes of the Scientific American, which we can supply at the annexed prices:—Of Volume 5, forty numbers; price in sheets, $1; bound, $1,75. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Volume 7, all; price in sheets, $2; bound, $2,75. Of Volume 8, none complete, but about 30 numbers in sheets, which will be sold at 50 cents per set. Of Volume 9, complete in sheets, $2; bound, $2,75. Subscribers who have missed numbers on she Volume juit closed, can be supplied with copies to fill the vacancy, excepting the following numbers: 1, 6, 9, 11, 22, and 23.

ADVERTISEMENTS.

Terms of Advertising.

4 lines, for each insertion,	$1,00
8 " " "	2,00
12 " " "	3,00
16 " " "	4,00

Advertisements exceeding 16 lines cannot be admitted, neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

THE SCIENTIFIC STAIR BUILDER by Robert Riddell; atlas quarto. Illustrated with forty plates. Price $5—This is a work that should be in the hands of every architect builder, and mechanic. The author having stripped the subject of all mystery and unnecessary lines, so that an ordinary workman can accomplish with ease and certainty, the most difficult and intricate description of stairs. It embraces the greatest amount of useful and original matter that has ever been published on this branch of art for which the author's well established reputation is a sufficient guarantee. The utmost care has been taken to arrange the practical diagrams, in order that they may meet the wants of those who have little or no experience in this art, and to furnish the most simple and comprehensive methods of attaining the object in view. Stone-cutters, masons, and all connected with building, are interested in this valuable book. John E. Carver, Architect, 51 Sixth street, Philadelphia, is the principal agent for the United States. All orders must be accompanied with the money. Single copies $5. The work may also be had at all the principal book stores in the large cities of the United States. 2 4

MILLWRIGHT AND MACHINE WORK—The subscriber keeps on hand and manufactures to order, Steam Engines of the following sizes, 3, 4½, 6, 8, 10, 12, 15, 18, 20, 25, 30, 40, and 50 horse power. These Engines are of the simplest, most economical, and substantial construction, and will be sold at the lowest possible terms. Also Saw Mills and Saw Mill Machinery of every description. Shafting, Gearing, &c., laid out and put up in the most approved and workmanlike manner. THOS. J. WELLS, Twenty-ninth Street and Eleventh Avenue. 2 2*

1854—WOODWORTH'S PATENT Planing, Tonguing, and Grooving Machines—Ninety-nine hundredths of all the planed lumber used, continues to be dressed with Woodworth's Machines.—For improved machines on iron frames, and rights to use in all the unoccupied Towns in New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 2 eow tf

TO MACHINISTS—Wanted, for immediate use, a Planing and Grooving Machine, with a circular saw to be worked from a drum in an adjoining mill, with a power faom 5 to 10 horse. Apply to WINSLOW & LAWRENCE. No. 4 Jones' Lane, Front st., N. Y. 2 2*

NEW IMPROVED MAN POWER.—This consists in arranging two levers, that a man standing on the lower one, and bearing down and lifting up on the upper one, being connected in such a way, which performs the work of two men, and by using toggle joints on the plunge of the Fire Engine and Ship's Pump in connection with the levers, that one man can perform with the machine the labor of several men. Daniel Tallcot of New York city, is the inventor. Steps to obtain a patent have been taken. Office, No. 34 Moore Street. 1*

NEW HAVEN MANUFACTURING COMPANY Machinists' Tools. Iron planers and Engine Lathes of all sizes. Hand Lathes, Gear Cutters, Drills, Bolt Cutters, Chucks, &c., on hand and being built by the quantity, which enables us to sell low. For cuts giving full description and prices, address New Haven Manufacturing Co., New Haven, Conn. 1 tf

HARRISON'S GRAIN MILLS—Latest Patent.—$1000 reward offered by the patentee for their equal. A supply constantly on hand. Liberal Commissions paid to agents. For further information address New Haven Manufacturing Co., New Haven, Conn. 1 tf

PATENT DRIERS—Zinc Driers, Graining Colors, Stove Polish, Gold Size, &c., &c., 114 John street, New York. QUARTERMAN & SON, Manufacturers. 1 6m

CHEAPEST AND BEST—The New York Weekly Sun is to be sent to subscribers after Oct. 1st, at 75 cents a year, ($1 pays for 16 months,) three copies for $2, or 25 copies for $15, and $100 cash premiums is to be divided among those who send in the most subscribers between Sept. 15th and Feb. 3rd, 1855. Specimen copies gratis. Address, (post-paid,) MOSES S. BEACH, Sun Office, New York. 1 tf

STAVE AND BARREL MACHINERY—Hutchinson's Patent. This machinery which received the highest award at the Crystal Palace, is now in daily operation there. Staves, heading, &c., prepared by it are worth to the cooper 20 to 40 per cent. more than when finished in any other way. Special attention is invited to the improved Stave Jointer. Apply to C. B. HUTCHINSON & CO., Crystal Palace, or Auburn, N. Y. 1 tf

RENSSELEAR POLYTECHNIC INSTITUTE—Designed for the education of Architects and Civil Engineers, including Railway, Hydraulic, Topographical, and Mining Engineers. For copies of the Annual Register, giving full information respecting the Institute, apply to B. FRANKLIN GREEN, Director, etc., R. P. I., Troy, N. Y. 1 8

TO IRON FOUNDERS—Scotch and American Pig Iron. English Sheet Iron and Boiler Plates. Fire Bricks, Clay and Sand, and all kinds of Iron Founders' Facing Materials for sale by G. O. ROBERTSON, 135 Water street, (corner of Pine) New York. 1 6*

STEAM ENGINE—80 Horse Power, for sale by the Lawrence Machine Shop. It is now driving the machinery in the Crystal Palace, and can be delivered the 1st of Nov., 1854. Apply to Gordon McKay, Treasurer, office 51 Broad street, New York, 47 State street, Boston; J. C. Hoadly, Superintendent, Office in Lawrence, Mass.: or David A. Clary, Selling Agent, Office at the Machinery Depot of the Lawrence Machine Shop. The Lawrence Machine Shop have now on hand Locomotives, Steam Engines, all kinds of Machinists' Tools, large Lathes (finished) for Locomotive Drivers and Planing Machines—that plane 3 feet square by 12 feet. Parker and Turbine Water Wheels, Wool Cards and Jacks, Shafting and Pulleys, &c., promptly made to order. A superior article fo Oak Tanned Sewed Leather Belting constantly on hand. Inquire as above. 1 4*

A. B. ELY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

United States Patent Office,
Washington, August 21, 1854.

ON THE PETITION of Milton D. Whipple, of Somerville, Mass., praying for the extension of a patent granted to him on the 28th day of October, 1840, for an improvement in "machine for cleaning wool from burs and other foreign matter, and also for ginning cotton," for seven years from the expiration of said patent, which takes place on the 28th day of October, 1854.

It is ordered that the said petition be heard at the Patent Office, on the 23rd of October next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 13th of Oct.: depositions, and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evening Argus, Philadelphia, Pa.; Scientific American, New York, and Post, Boston, Massachusetts, once a week for three successive weeks previous to the 23rd day of Oct. next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 51 3

United States Patent Office,
Washington. August 18, 1854.

ON THE PETITION of Solomon Andrews, of Perth Amboy, New Jersey, praying for the extension of a patent granted to him on the 5th of December, 1840, for an improvement in the "manner of constructing padlocks for mail bags and other uses, called the clam-shell padlock," for seven years from the expiration of said patent, which takes place on the 5th day of December, 1854:

It is ordered that the said petition be heard at the Patent Office on Monday, the 13th of November next, at 12 o'clock M., and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days from the day of hearing. All testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the Office, which will be furnished on application.

The testimony in the case will be closed on the 3d of November; depositions and other papers relied upon as testimony must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Penn.; Scientific American, New York; and Post, Boston, Mass., once a week, for three successive weeks previous to the 13th day of November next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 2 3

United States Patent Office,
Washington, August 18, 1854.

ON THE PETITION of Jordon L. Mott, of Mott Haven, praying for the extension of a patent granted to him on the 1st day of December, 1840, for an improvement in "the mode of constructing a combined cauldron and furnace for the use of agriculturists and others," for seven years from the expiration of said patent, which takes place on the first day of December, 1854:

It is ordered that the said petition be heard at the Patent Office on Monday, the 6th day of November next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 31st day of October, 1854; depositions and other papers relied upon as testimony must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evening Argus, Philadelphia. Penn.; Scientific American, N. Y.; and Post, Boston, Mass., once a week for three successive weeks previous to the 6th of November next, the day of hearing. CHARLES MASON,
Commissioner of Patents.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 1 3

MAGIC LANTERNS AND DISSOLVING Views for Sunday Schools, Academies, and Public Exhibitions, with Scriptural, Astronomical, Temperance and other Paintings A priced and illustrated Catalogue of Lanterns and Slides sent by Mail, free of charge.
McALLISTER & BROTHERS,
1 3. 48 Chestnut Street, Opticians, Philadelphia.

NORTHVILLE MACHINE WORKS—Manufactory of Machinists Tools, consisting of Engine Lathes, Power Planers, Hand Lathes, Engine Lathe for turning chair stuff, all of the most improved patterns and quality of workmanship. Worcester, Northville, Mass., August 9, 1854. TAFT & GLEASON. 50 1y*

NEW PATENT FLOUR AND GRAIN MILL—Patented June 6th, 1854. The subscriber is finishing the following mills: 8 twenty inch, price $100; 6 thirty inch, $200; 3 three feet, $300; 2 four feet, $400, and will pay $1,000 for any other mill as durable, simple, economical of power, which will grind as much from one dressing, which will heat the flour and meal as little, and is as easily kept in order. Cuts sent to post-paid applications, and liberal commissions allowed to agents for cash orders. EDWARD HARRISON, New Haven, Conn., July 24th. sole owner of all interest in the patent right. 50 9*

JOHN PARSHLEY, manufaeturer of machinist's tools, No. 5 and 7 Howard street, New Haven, Ct., is now finishing a lot of iron planers to plane 8 5-12 feet long, 30 in. wide, and 26 in. high, having the down and angle feed in the cross head, the planers all of the best quality, and prices extremely low for the quality. Cuts with full particulars can be had by addressing as above, post-paid. 1 tf

LARGE POWER PLANER—Will plane 20 feet long, 3 feet 5 in. wide, and weighs over 6 tuns. Now ready for delivery, and will be sold lower by $300 than the same quality of machine can be bought anywhere else. Warranted good. Call and see, or address, (post-paid) C. POTTER, Jr., Westerly, R. I. 51 3*

JOHN PARSHLEY, Manufacturer of machinists tools, No. 5 and 7 Howard street, New Haven, Ct., has for sale 1 locomotive lathe, which has not been used more than two months, all told, and is as good as new, its first cost was $1250; having come into present hands with a large lot of other tools, it is now offered for the small sum of $900 cash; weighs 9 tuns, head boring of the arbor is 12 in. diameter, swings 7 4-12 feet, has counter shaft and pullies. Cuts of the same can be had by addressing as above, post-paid. 1 2

PATENT SASH FASTENER—The subscriber will sell rights to make and sell his improved Sash Stopper and Fastener as follows:—License for any town of not over 5,000 inhabitants, and one dozen fasteners with directions, $5: for larger towns and cities or counties on liberal terms. Letters to be addressed (post-paid,) W. S. HADAWAY, Chiltonville, Mass. P. S.—See engravings of this invention in No. 51, Vol. 9, Sci. Am. 51 3*

IRVING'S PATENT SAFETY CIRCULATING STEAM BOILER—For Stationary, Locomotive, and Marine Engines. These Boilers having been thoroughly tested by scientific experiment and practical use, are being rapidly introduced into every part of the United States. Their claims to superiority are fully supported by the united testimony of highly respectable parties, who have given them the most successful trials. The following are among the chief advantages of this Boiler: 1st. Great increase of heating surface, with diminution of bulk. 2nd, Economy of fuel—a saving of more than 50 per cent. being effected over other boilers. 3rd. Economy of space, compactness, and strength of form. 4th. Increased safety from explosion. 5th. Freedom from incrustation. Circulars obtained on application at the Company's Office. Boilers of any required power furnished on short notice. Rights negotiated for all parts of the United Staies, England, France, and Belgium.—All communications promptly attended to.
W. F. PHELPS,
45 3m* Sec'y Irving S. Boiler Co., 347 Broadway, N. Y.

KENTUCKY LOCOMOTIVE WORKS—Corner of Kentucky and Tenth streets, Louisville, Ky.—The proprietors of the Kentucky Locomotive Works would respectfully inform Railroad Companies and the public generally, that, having completed their establishment, they are now prepared to receive and execute orders with fidelity and dispatch. They will contract for Locomotives, Passenger, Baggage, Freight, Gravel, and Hand Cars, of every style and pattern, as well as all kinds of Stock and Machinery required for railroads.—Particular attention will be paid to Repairing, for which they have every facility. They are also prepared to contract on favorable terms for building all kinds of Machine Tools, such as Turning Engines, Laths, Planers, Drills, Slotting, Splining, and Shaping Machines of every variety of pattern. Having also a large Foundry connected with the establishment, orders for castings are solicited, and will be filled with promptness. Car Wheels of any pattern can be furnished on short notice. Double and single plate and Spoke Wheels of all sizes constantly on hand. Communications or orders must be addressed to OLMSTED, TENNEYS & PECK, Louisville, Ky. 40 6m*

MECHANICAL ENGINEERING—CHARLES EHMAN & CO., Consulting Engineers and Designers, 333 Broadway, New York. Designs, Working Drawings, estimates and contracts for high or low pressure steam engines (Ehman's improved vertical engine) Boilers, Pumps, Presses, Saw and Grist Mills, Tools and Machinery of every description. Particular attention paid to making drawings and working plans for inventions and models, to the construction of patent machines, etc., etc. Arrangements made, and plans furnished for putting up and locating Engines, Boilers, Shaftings, and all kinds of machinery in buildings, etc., etc. 51 8*

REYNOLD'S DIRECT ACTION and Re-Action Water Wheel—This is one of the most simple, cheap, and efficient Iron Water Wheels now in use. For description, cuts, &c., apply to SAML. B. LEACH, Agent, 60 Beaver st., N. Y. 45 13*

FOR GREASING MACHINERY—For all purposes of lubrication, "Metallic Oil" has many recommendations. Its tendency to remain on a smooth surface of metal, instead of running off or evaporating, its property of resisting heat and keeping the bearings of machinery cool, and its freeness from "gum," are important considerations with engineers and machinists. A fair trial will convince any unprejudiced person that it is a very valuable substitute for sperm oil.
For sale in quantities to suit purchasers by
YOCKNEY & CO.,
Sole Manufacturers of Cumberland Brothers' Patent "Metallic Oil," Elizabethport, N. J., office 67 Exchange Place, N. Y. 45 12*

READING'S PATENT CORN SHELLER and Cleaner—capacity 200 bushels per hour. 9 first premiums awarded in the Fall of 1853. Patent Rights and Machines now for sale at the corner of 2nd Street and Pennsylvania Avenue, Washington, D. C. I challenge the world to produce its equal. Address personally or by mail. WILLIAM READING. 43 13*

THE EUROPEAN MINING JOURNAL, Railway and Commercial Gazette. A weekly newspaper, forming a complete history of the Commercial and Scientific Progress of Mines and Railways and a carefully collated Synopsis, with numerous Illustrations of all New Inventions and Improvements in Mechanics and Civil Engineering. Office, 26 Fleet Street, London.—Price $6 1-2 per annum. 43

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc.
CHARLES W. COPELAND,
1 tf Consulting Engineer, 64 Broadway.

THE MERIDEN MACHINE CO.—Successors to Oliver Snow & Co., West Meriden, Conn. Have on hand and make to order a great variety of Lathes, Planers, and other machinists tools of superior quality and finish. Cuts of these tools may be had on application as above, with full particulars. They also manufacture Farnam's Patent Lift and Force Pumps of all sizes. For mines, factories, railroad stations, &c. Having a large and extensive variety of patterns, the accumulation of over 20 years business, and extensive facilities for making light or heavy castings, are prepared to contract for any kind of mill work, mining machinery, &c. New York Office and Sample Room, No. 15 Gold, cor. Platt st. 1 tf

PHŒNIX IRON WORKS—GEO. S. LINCOLN & CO., Hartford, Conn. Manufacturers of Machinists Tools. Are constantly making and have now on hand an assortment of Screw Cutting Engine Lathes, viz.:—1. bed 10 feet long, swing 20 inches. 2. bed 14 feet long, swing 30 inches. 3. bed 16 1-2 feet lon g, swing 40 inches, with improved bed, cast steel spindles, feed motion carried by a screw, toothed rack for moving tool rest by hand, improved gibb rest and tool stock, stationary and traveling back rest; also manufacturers of Lathes for turning Locomotive Driving Wheels, small Power Planers, Upright Drills, Power Punching Presses, &c. Designs of the tools with further descriptions, will be sent by addressing as above. 1 3m

LEONARD & WILSON—No. 60 Beaver st., and 109 Pearl st., have constantly on hand and for sale a full assortment of Machinists' and Carpenters' Tools, embracing every variety of Engine and Hand Lathes, Iron Planing Machines, Mortising and Tenoning Machines, Wood Planers, &c. Also Leather Belting of all sizes made of the best oak tanned butts, stretched on powerful machines, riveted and cemented. 42 13*

PALMER'S PATENT LEG—"The best appliance ever invented." Pamphlets containing the testimonials of the first American and European surgeons, and other information concerning this invention sent gratis to all who apply to PALMER & CO., Springfield, Mass.: or 376 Chesnut st., Philadelphia. 42 13*

NORCROSS' ROTARY PLANING MACHINE—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringement of the Woodworth Patent.
Rights to use N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
The printed report of the case with the opinion of the Court can be had of Mr. Norcross, at Lowell, or 27 State street, Boston. 36 6m*

MACHINISTS TOOLS—SHRIVER & BROS., Cumberland, Md., (on B. and O. Railroad, midway between Baltimore and the Ohio River,) manufacturers of Lathes, Iron Planers, Drills and other machinists tools 50 6m*

© 1854 SCIENTIFIC AMERICAN, INC.

Science and Art.

California Academy of Natural Sciences.

POLYPS.—The city of San Francisco, (Cal.) is composed of *all kinds of people*, and among these some of the ablest men on our continent. California has allured many of the most gifted, learned, and ingenious men—chemists, mechanicians, and artists—from all parts of the world, and we have been told by one who has resided there for a number of years, that, in proportion to its inhabitants, San Francisco contains five times more scientific men than New York. We have some strong evidence of the truth of this statement in the accounts recently published in our San Francisco cotemporaries, of an Academy of Natural Sciences having been formed in that city, and measures having been taken by it to lay out a botanical garden, and provide a library, museum, &c.

At a meeting of the Academy held on the 31st of last July, Dr. Ayres exhibited a species of hydra, found in a stream near the Mission Dolores. These are minute Polyps, approaching the lowest recognized type of animal existence. A hydra may be cut in pieces without injury, each piece becoming in time a perfect hydra: he had verified this a number of times. These little Polyps are found adhering to sticks in most of the gently flowing streams of California. They look like little lumps of jelly—have a thread-like crown of arms, and are in length about half an inch, no thicker than a fine sewing needle, and of a light reddish brown color. Dr. A, on arriving in California, felt desirous of ascertaining whether the same forms existed on that side as on the east of the continent, two species having been known to him in the Eastern States. In Europe there are two species, one brown and one green; in the vicinity of Boston there are two resembling the European types in color. Prof. Agassiz has named them *gracilis* and *carnea*. Dr. Ayres thus describes the three species :—

"1. *H. gracilis* (Agassiz.)—Very small, of a bright green, closely allied to *H. viridis*, but much more extensible. Found in the eastern part of Massachusetts, probably in other parts of the Eastern States.

H. carnea (Agassiz.)—Larger than the *gracilis*, of a light reddish brown, allied to *Hydra fusca* but having the tentacula shorter. Found in Massachusetts and Connecticut very abundantly; much more common than the last.

H. tenuis (Ayres.)—About the size of the *carnea*, which it resembles in color, and to which it is allied, but from which it differs in the same point and to about the same degree as *carnea* differs from *fusca*. The tentacula are much less developed, having not more than about half the size of those of *carnea*. Found very abundantly near San Francisco, California.

Whether we shall yet detect, on this side of the mountains, a green species to represent *H. gracilis*, or perhaps others entirely distinct, is left for future research."

The points of structure referred to in the communication, were exhibited under the microscope, and illustrated by drawings.

Explosive Burning Fluids.

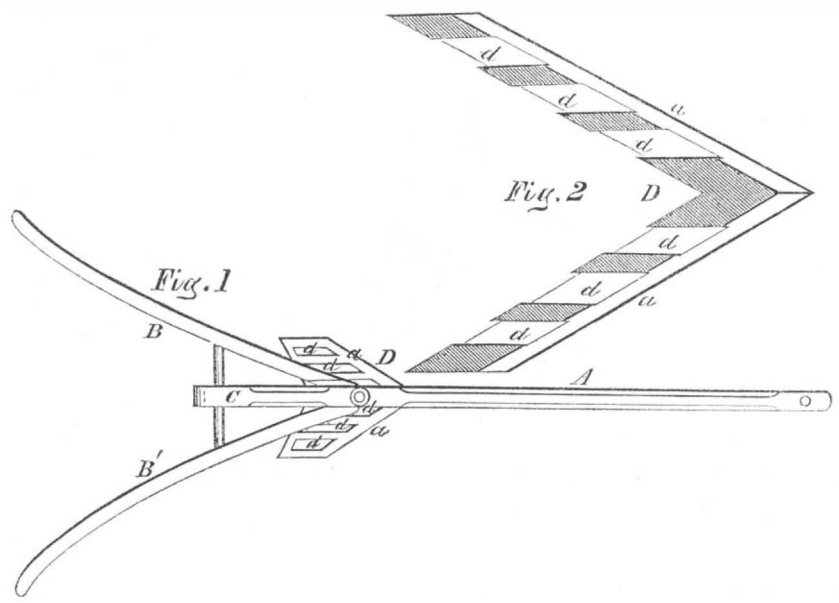
We have noticed in some of our cotemporaries, accounts of a number of accidents from the use of volatile fluids used for illumination, and sold with the guarantee of not being explosive. It is indeed true that none of these fluids are really explosive—they must change their state from the fluid to the gaseous, and mix with the atmosphere before they become explosive. It is therefore wrong for the sellers of these fluids to take advantage of the public by a technical deception. Such a deception is the more to be deprecated because it tends to make persons more careless in the use of such fluids.

To Clean Silver Plate.

It is not safe to clean silver plate with an acid, as it will remove the thin skin of the precious metal which is laid on the copper (or white metal) whether laid on by the old method of plating or by the galvanic battery. Sweet oil and rotten-stone, finishing either with prepared whiting or tripoli, are the only safe materials to use for cleaning silver plate

POTATO DIGGER.

On the 4th of July last, a patent was granted to Galusha J. Bundy, of Lyndon, Vt., for an improvement in machines for digging potatoes, represented by the annexed engravings,—figure 1 being a top view and fig. 2 a transverse section of the mold-board, The same letters of reference indicate like parts on both figures. This agricultural implement is in many respects like a common plow; it has a beam, A, and handles, B B, united to an inclined bar, C, to which the scoop or plow-share, D, is attached. The scoop is formed with two angular mold-boards, *a a*, forming an angle. The improvement consists in providing these mold-boards with slots, *d d d*, arranged in vertical directions, or nearly so; that is, standing upwards rather than horizontally. The planes of these slots are disposed parallel to each other and to the plane of the beam, and they are each made to extend from near the bottom of each mold-board to near the top of the same. Through these slots the

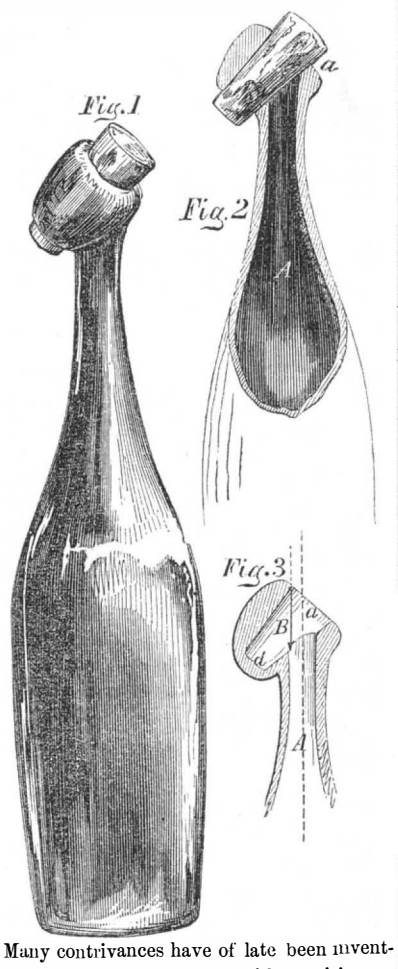


dirt passes while the machine is used in plowing through or digging into a potato field, the potatoes being thrown upon each side of the furrow and left in full sight. This mold-board works through the earth or soil, acting like a seive, raising and separating the potatoes from the earth, and leaving most of the earth or soil in its place.

There can be no question about the simplicity of this potato digging plow: it raises the potatoes and leaves them only to be gathered up, which labor can be performed by boys. The claim is for the construction of the potato plow, with slots standing vertically or nearly so, and having their respective planes parallel to a vertical plane passing through the draught beam. Digging potatoes is a severe and tedious operation; any machinery to obviate the manual labor in this department of agriculture, should be welcomed by all those engaged in farming. We have been assured by Mr. Bundy that it will turn out several acres of potatoes in a day, and that it can be handled with as much facility as a common plow.

More information respecting patent rights, &c., may be obtained by letter addressed to the patentee at his residence, Lyndon, Vt.

Brown and Boeklen's Improved Bottle for Effervescent Drinks.



Many contrivances have of late been invented to secure corks in bottles without wiring or tying, and for this purpose the necks of the bottles have been variously formed: some have been made with screws, and others have had pins inserted transversely, and others again formed in various expensive ways to receive stoppers. This invention, which was patented July 25, 1854, enables the bottle to be closed by a common cork, which merely requires to be driven into its place, where the pressure of the gas acts upon it only laterally or on its side, and not on its end, and therefore does not tend in any way to expel it. The cork is inserted at the mouth of the bottle, but instead of passing down the neck, it enters an oblique passage, and passes through one side.

Fig. 1 is an outside view of one of these bottles, and fig. 2 a section of the neck, mouth, and cork passage.

A is the neck; *a* is the mouth; B is the cork passage, to receive the cork. In this bottle the cork passage is open at the lower end, and both ends of the cork are exposed, but in figure 3 a section is represented of the neck and mouth of a bottle on the same principle, with the lower end of the cork passage closed at *d*. The latter form may be used if it be desired to compress a small quantity of air in the bottle, as is done by corking a common bottle; but the former allows no air to be compressed, which gives additional security against bursting the bottle. One of the most important characteristics of the invention is, that though the cork is exposed laterally to the pressure of the gas, an unobstructed straight passage is left through the neck of the bottle. This peculiarity will be best understood by referring to the dotted lines in fig. 3. The liquid can be poured out in as regular a stream as from a common bottle, without splashing.

The invention is well worthy of the attention of manufacturers of bottles, either in glass or stone ware.

For any further information on the subject, apply by letter (post-paid) to H. T. Brown, 150 Adelphi street, Brooklyn, N. Y., or to R. Boeklen, No. 5 Essex street, Jersey City.

Clocks.

Connecticut has twenty-eight clock factories, employs 1,279 hands in the manufacture, has $1,002,000 capital invested, and makes annually 790,000 clocks. One fourth of these time keepers find a market in England.

LITERARY NOTICES.

THE SCIENTIFIC STAIR BUILDER.—Our readers will remember that we gave in our last volume some account of a work which was in press, bearing the above title, by Robert Riddell, an experienced, skillful, stair builder of Philadelphia. That work has now been issued from the press, and does honor to its author. It contains 40 plates with clear and full explanations. The book is well printed, and the plates are large and well executed. The art of stair-building is one of great beauty because it embraces a high range of geometrical knowledge and mechanical skill. It is true that men may be engaged in it who possess these qualifications to a very limited extent, but to be a master mechanic—a true journeyman stair builder—a man must write geometry with his saw and chisel, in rail, baluster, and plank. This is just the work for those who desire to be superior and scientific workmen. We cannot enter into a description of the several plates, nor present even an outline of the peculiar features of this work, it must be seen and examined for itself, and every stair builder, architect, and house builder should see it. The most experienced in the art will find something new in it, and the youngest 'prentice will find it to be the beacon of his trade. We hail this work from a working-man, as being one of the finest acquisitions ever made to the practical scientific literature of the age. For particulars respecting where it can be obtained, we refer our readers to an advertisement in another column.

BUSHMAN'S PRINCIPLES OF PHYSIOLOGY.—This is the title of a neat little volume just issued by Messrs. Blanchard & Lea, Philadelphia, republished from the London edition. It is a popular treatise on the functions and phenomena of human life. The author, Dr. J. Stephenson Bushman, is physician of the Metropolitan Hospital; he treats the subject in a clear and instructive manner. It is well illustrated, and is a work which we can sincerely recommend for schools and libraries.

OVERMAN'S PRACTICAL MINERALOGY.—Lindsay & Blakston have issued a new edition of this excellent work by the late Frederick Overman. It is divided into three parts, viz.: Mineralogy, Mining, and Assaying, and is very full in all that relates to the useful metals. It is useful to every man who works in the metals, no matter what kind of metal, or to what uses he applies them.

WARING'S ELEMENTS OF AGRICULTURE:—Geo. E. Waring, Jr., Consulting Agriculturist, this city, is the author of the above work, and D. Appleton & Co., are the publishers. It treats of the nature of plants, the soil, manures, mechanical cultivation and analysis. It describes Prof. Mapes superphosphate of lime. It is composed of 100 lbs. bone black, 56 sulphuric acid, 36 guano, and 20 sulphate of ammonia.—The book is dedicated to Prof. M., the author having been his pupil. It contains some good illustrations, and is worthy of being extensively read and studied.

CALIFORNIA CHRONICLE—We are indebted to the publishers, Frank Soule and Co., for regular files of this spirited journal. The *Chronicle* is a large, well edited, handsome daily, and its columns attest to its value as an advertising medium. It seems to deserve and enjoy a liberal patronage from Californian business men.

THE MINING MAGAZINE—for September, contains its usually interesting and valuable variety of matter upon mining and kindred branches. This journal is under the management of W. J. Tenney, and is a publication of great merit.

HOUSEHOLD WORDS and ILLUSTRATED MAGAZINE OF ART—These sterling publications are now managed by T. L. McElrath & Co., Spruce street, and are among the choicest works of the day. The Magazine of Art is superbly illustrated with the very best specimens of wood engraving. Charles Dickens, Leigh Hunt, Faraday, and other eminent writers, supply the columns of the *Household Words*.

Inventors, and Manufacturers

The Tenth Volume of the SCIENTIFIC AMERICAN commenced on the 16th of September. It is an ILLUSTRATED PERIODICAL, devoted chiefly to the promulgation of information relating to the various Mechanic and Chemic Arts, Industrial Manufactures, Agriculture, Patents, Inventions, Engineering, Millwork, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

Its general contents embrace notices of the LATEST AND BEST SCIENTIFIC, MECHANICAL, CHEMICAL, AND AGRICULTURAL DISCOVERIES, —with Editorial comments explaining their application notices of NEW PROCESSES in all branches of Manufactures; PRACTICAL HINTS on Machinery; information as to STEAM, and all processes to which it is applicable; also Mining, Millwrighting, Dyeing, and all arts involving CHEMICAL SCIENCE; Engineering, Architecture; comprehensive SCIENTIFIC MEMORANDA: Proceedings of Scientific Bodies; Accounts of Exhibitions,—together with news and information upon THOUSANDS OF OTHER SUBJECTS.

Reports of U. S. PATENTS granted are also published every week, including OFFICIAL COPIES of all the PATENT CLAIMS; these Claims are published in the Scientific American IN ADVANCE OF ALL OTHER PAPERS.

The CONTRIBUTORS to the Scientific American are among the MOST EMINENT scientific and practical men of the times. The Editorial Department is universally acknowledged to be conducted with GREAT ABILITY, and to be distinguished, not only for the excellence and truthfulness of its discussions, but for the fearlessness with which error is combated and false theories are exploded.

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and PEOPLE IN EVERY PROFESSION IN LIFE, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them HUNDREDS OF DOLLARS annually, besides affording them a continual source of knowledge, the experience of which is beyond pecuniary estimate.

The SCIENTIFIC AMERICAN is published once a week; every number contains eight large quarto pages, forming annually a complete and splendid volume, illustrated with SEVERAL HUNDRED ORIGINAL ENGRAVINGS.

TERMS! TERMS!! TERMS!!!

One Copy, for One Year	$2
" Six Months	$1
Five copies, for Six Months	$4
Ten Copies for Six Months,	$8
Ten Copies, for Twelve Months	$15
Fifteen Copies for Twelve Months	$22
Twenty Copies for Twelve Months	$28

Southern, Western, and Canada Money taken at par for Subscriptions, or Post Office Stamps taken at their par value. Letters should be directed (post-paid) to

MUNN & CO.
128 Fulton street, New York.

☞ For LIST OF PRIZES see Editorial page.

© 1854 SCIENTIFIC AMERICAN, INC.